Volume 89 Number 21

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

AN ECONOMIST observed recently that prosperity would return to the nation only as individual corporations adjusted their affairs to insure profitable operation at the first meeting with reviving demand. Certainly, steel qualifies for a place on the reception committee. In this quarter, for the first time since stringent economy became imperative, steel is realizing (page 17) the full benefits of reduced salaries, wages, miscellaneous expense. Only essential costs have survived. And so thoroughly has steel cleaned house financially that, whereas the industry passed "into the red" just a year ago when operating at 55 per cent, it apparently will reenter the profit area when production crosses 45 per cent on the way up.

Steel Earning 8 Mills on the Dollar

This economist may have glimpsed the true situation in steel, as the incidence of economy upon costs, plus a slight appreciation in tonnage, may supply in the current quarter the first recovery in steel financial statements in two years. But 1931 already is past retrieving financially, considering that eight producers representing 77 per cent of the industry earned only 87/100 of 1 per cent upon their investment of almost four billion dollars in the first nine months (page 17). . . . As straggling financial returns come in (page 20), the dubious honor of recording the poorest financial situation for steel in at least 20 years is assured for the third quarter.

Industry May Win by Dead Heat in Congress

As if industry has not suffered sufficiently, in three weeks congress will again be sitting at Washington, but there may be safety in the close division of power between Republicans and Democrats. Congress may be relied upon (page 18) to concern itself first with finance—how to balance the budget, adjust the foreign situation, relieve the tension on domestic credit, retain railroad securities on legal investment lists—but always with an eye on the presidential election of 1932. Of course, there will be a parade of economic panaceas, but with congress close and the President ready with his veto power, the resulting stalemate may have its merits.

Mid All Other Issues, Manganese

Steel producers, overwhelmingly partial to foreign manganese, have been living in fancied security since spring, when they deemed the manganese question settled by refusal of the treasury department to issue a dumping order

This pier of George Westinghouse bridge at Turtle Creek, Pa., is 460 feet center to center, said to be largest in the United States. The bridge will improve the Lincoln highway just east of Pittsburgh

All that passes through pipe lines is not oil, gas or gasoline. This 2000-foot line at New Orleans, using couplers made by the S. R. Dresser Mfg. Co., Bradford, Pa., has been pumping molasses

against Soviet Russia. Domestic miners intend (page 18) to reopen the controversy, present to congress first hand evidence purporting to prove dumping, demand an embargo. . . . Manganese undoubtedly will be on the stabilization program for minerals to be considered (page 23) at the nearby American mining congress.

Trying to Put Railroads on Right Track

The one important undisclosed item remaining on the President's business relief agenda pertains to the railroads, and it may hold over as a high light of the President's message to congress Dec. 8. Meanwhile, the railroads, rebuffed in their proposal that revenue accruing from the forthcoming increase in freight rates be distributed by the stronger roads as a loan, are proceeding with another program. Other railroad developments (page 19) of the week are: Suspension of increased switching rates in the Chicago district until Dec. 10; announcement of the interstate commerce commission that it will consider the 4-system consolidation of eastern carriers Jan. 6.

Steel Would Avert Relapse in Sentiment

Steel is no less convinced that a constructive stiffening of morale has occurred, but is increasingly disposed (page 55) to be conservative and prevent sentiment from over-running actual progress. . . . A fractional gain lifted steelmaking operations (page 62) to 31 per cent last week, and further improvement is indicated when automobile manufacturers release steel for their 1932 models. If Ford orders for 60 to 90 days ahead, as reported (page 25), decided stimulus should result. . . . British producers, still impelled by cheaper money, are discovering (page 82) a new market—their home market from which lower-priced Continental steel formerly debarred them. . . . Foreign competition in American markets (page 55) is accentuated.

Preheating an Aid in Use of Plates

Flexibility, economy and speed are three advantages claimed for gas cutting of heavy steel plate by machine (page 31). Although the cutting flame changes the cut edges of the steel from pearlitic to sorbitic structure, with some increase in carbon content, this can be remedied by preheating and annealing. . . . At an electric welded pipe mill the difficulty of heating plates in sufficient quantity and at correct temperatures was overcome (page 44) by preheating at 1000 degrees Fahr. . . . A new cemented carbide for machining steel, developed in Germany and being introduced here, is said to show remarkable increases in cutting speeds (page 34). It embodies a rare metal carbide not previously used, supplements tungsten carbide.

Heat and Pressure Vie With Rolls

Fixture as the rolling mill is, it has competition. By a new type of metallurgy, finely powdered metals are pressed and sintered into products, especially corrosion-resisting parts and where self-lubrication is an advantage (page 40). Valve tappets, resistance bars, welding rods, electrical parts, high-speed machine tool bits are some successful products. . . . Neither the pressure of rolling nor the heat of sintering can rob tool and alloy steels of "personality," a metallurgist claims (page 18). . . . A novel device at a Pittsburgh district steelworks (page 44) keeps the furnace yard tidy by preventing clouds of dust when the dust catcher is emptied.

Lifting Steel by Its Bootstraps

Counterparts of the storekeeper's string are the heavy flat steel bands which are tensioned (page 36) around shipments of steel products, such as tanks, drums, automobile frames, sheets or even kegs and boxes, permitting them to be lifted as a unit. . . . One sheet mill conserves labor in handling its product to and from cold mills by a system of gravity roll conveyors (page 44), packs up to 8 tons being piled on skids.

Steel Costs Are Trimmed for Profit at 45-50% Rate

AFTER nine of the leanest months in the history of steel, during which profits have averaged 87/100 of 1 per cent and production 41 per cent, the industry is in fighting trim in the matter of costs.

For more than a year producers have been whittling at costs, but only with the beginning of the current quarter, when lower common wage rates were applied, has the full and combined effect of reductions in salaries, wages and miscellaneous items of expense been realized.

Like Joffre at the Marne, steel is taking its stand. It may be more than a coincidence that steel has set its house in order, has concluded jettisoning every superfluous cost, at about the time when dark overhanging economic factors appear to be breaking up, brightening the industrial landscape.

Not even the most sanguine of steel executives entertain any illusions of a genuinely profitable era being immediately at hand. Especially considering the showing of the first nine months of 1931, when eight important producers representing 77 per cent of the country's capacity for making steel earned an average of 87/100 of 1 per cent on their combined investment of almost $4,000,000,000.

But, so drastic have been the economies, so thorough the housecleaning, that when the market improves steel will cross the threshhold of profits at an operating rate measurably lower than would have been the case a year ago. For each producer the situation obviously is different, but it is the composite opinion of the industry that when the steel rate crosses 45 to 50 per cent on the way up the industry will again make money.

Somewhere late in the third or early in the fourth quarter of 1930 steel "went into the red." For the United States Steel Corp., judging from a recent official statement, this transitional period occurred in September, 1930. Bethlehem Steel Co., on the other hand, earned a few cents on its common stock as late as the first quarter of 1931.

For the industry as a whole, however, profits vanished somewhere near the turn of the last quarter of 1930, and at that time, according to steel production statistics of the American Iron and Steel institute, operations ranged between 50 and 58 per cent, averaging close to 55.

In other words, the steel industry ceased making a profit when its production averaged 55 per cent; it is now believed that profits will return when operations cross 45 per cent on the way up.

Last week the operating rate as compiled by STEEL was 31 per cent; for this week it probably will be 31.5. It has not been so high as 45 per cent since the second week of May.

Due to the reduction of common wage rates, fourth quarter earnings reports may show slight improvement over the third quarter. Variations in tonnage and selling prices between the two quarters will be slight, but the savings in labor charges—estimated at $6,500,000 to $8,700,000 for the Steel corporation alone—may tip the scale.

When business does come back, production can be expanded appreciably without any increase in labor or sales forces, there will be stocks of the lowest-priced scrap in a generation, practically all of the economies effected in the past year will

Steel Profits Off Again

Year	Per cent on capital
1931 (9 months, estimated)	0.87
1930	4.54
1929	9.26
1928	6.55
1927	5.22
1926	6.86
1925	5.61

How Bethlehem Profits Fell with Operations

Quarters	Per Cent Operations	Earnings per Common Share
1929		
1st	91.9	$4.05
2d	100.6	5.35
3d	97.8	4.01
4th	76.8	2.75
1930		
1st	80.8	2.60
2d	69.3	1.86
3d	54.6	0.63
4th	42.5	0.17
1931		
1st	50.8	0.06
2d	41.5	0.30 (Deficit)
3rd	32	1.02 (Deficit)

Steel Industry Earns 0.87 Per Cent in First Nine Months of 1931

	Total Capitalization	Steel Ingot Capacity (gross tons)	Total Earnings Before Dividends and Bond Interest 9 mos. 1931	Year 1930	Earnings per Common Share 9 mos. 1931	Year 1930	Per cent Earned on Capitalization 9 mos. 1931	Year 1930
United States Steel Corp.	$2,152,805,302	24,541,000	$21,755,678	$110,061,667	$0.08—	$9.18	1.01	5.11
Bethlehem Steel Co.	670,365,659	10,000,000	7,476,357	31,015,923	1.24—	5.26	1.11	4.63
Republic Steel Corp.	275,840,516	4,900,000	267,245—	136,935	2.78—	1.59—	.....	0.05
Youngstown Sheet & Tube Co.	212,863,681	3,000,000	1,163,029	10,695,455	2.93—	5.17	0.54	5.02
(9 mo. 1931 earnings for below-named companies are before dividends but after bond interest)								
Jones & Laughlin Steel Corp.	201,947,252	3,270,000	733,511—	9,396,302	1.27—	8.21	.....	4.65
National Steel Corp.	114,606,668	2,000,000	3,774,610	9,219,662	1.75	3.91	3.20	8.04
Inland Steel Co.	95,605,097	1,800,000	496,796	6,498,967	1.24	5.41	1.55	8.15
American Rolling Mill Co.	113,342,560	1,557,000	300,219—	2,028,783	0.77—	0.03	.....	1.79
Total	$3,837,376,735	51,068,000 tons, 77% of industry	$33,365,495	$178,779,824			0.87	4.66

Capitalization figures are as of Dec. 31, 1930. Ingot capacities are of late 1930, but little changed for today. Earnings total for 9 months of 1931 is the net after deducting losses by Republic, Jones & Laughlin, American Rolling Mill. Differing accounting methods make strictly accurate comparison of earnings difficult, but result is approximately accurate.

show up to a greater advantage per ton of production.

Of eight leading producers of steel —United States Steel, Bethlehem, Republic, Jones & Laughlin, Youngstown, National, Inland and American Rolling Mill—representing 51,000,000 of the 66,000,000 tons of steel-making capacity, only five returned anything on their capitalization in the first three quarters of 1931.

Total capitalization of these eight producers is $3,837,376,000, figuring as of last Dec. 31. On this capitalization they earned $33,365,495 in nine months of 1931, compared with $178,779,824 in all 1930. In nine months of 1931 the return has been 0.87 per cent; in all 1931 for the same interests it was 4.66 per cent.

National Steel leads all producers for the first three quarters of 1931 with an estimated earning of 3.2 per cent, Inland is second with 1.55, Bethlehem third with 1.11, the Steel corporation fourth with 1.01, Youngstown fifth with 0.54. Republic, Jones & Laughlin and American Rolling Mill, the remaining three companies in this computation, report deficits, but after payment of bond interest.

Only Finance's Dominance Is Certain in Confused Congress

WASHINGTON—In another three weeks, or on Dec. 7, congress will again convene, and since this session will be the long one, without constitutional limitation, it is expected to be prolonged until the national political convention season in June.

For the first time in President Hoover's administration the opposition will be in control of one of the houses of congress. At this time the lineup of the house is 217 Democrats, 214 Republicans, 1 farmer-labor representative and 3 vacancies. Presumably the Democrats will organize the house and take control of committees.

Republicans continue to control the senate on the basis of 48 Republicans, against 46 Democrats, 1 farmer-labor senator and 1 vacancy. Thus far there is nothing to confirm rumors that President Hoover will seek a political moratorium at this session to expedite necessary legislation.

Action by congress probably will be colored by two factors—the economic distress of the country and the desire to write a record for the 1932 presidential election. Attempts at financial relief, inciting the introduction of numerous panaceas, undoubtedly will make finance dominant.

In view of the government's operating deficit, increased federal taxes appear a foregone conclusion, despite the reluctance of both parties to add to the tax burden just prior to a national election. Some believe that the proposals of Representative Bacharach, of New Jersey, to raise the higher income tax brackets and to step up luxury, inheritance and gift taxes, stand a fair chance of acceptance. Agitation for a sales tax must be reckoned with.

Revision of eligibility rules of the federal reserve system to increase the liquidity of negotiable instruments is to be sought. Also, means whereby the government can expand its subscription to federal land banks to permit them to participate more heavily in the $500,000,000 bankers' pool.

With Democrats in control, at least of the house, an effort to amend the tariff is possible, but a veto by the President probably would intervene. The matter of unemployment insurance and similar labor relief measures are certain to arise, but sentiment for them is only lukewarm.

Those interested in immigration believe there will be further restriction, with reduction of all quotas by 90 per cent, registration of aliens and a quota system for all countries of this hemisphere.

It is incumbent upon congress to make good its pledge to ratify the President's moratorium on war debt payments for the year ending next July 1. Certain legal steps in connection with the National Credit Corp. are agreed upon. It is possible that an effort will be made to revive the War Finance Corp. or its equivalent.

The railroad situation will not be neglected and the President may be expected to propose a program to prevent securities of the more important carriers automatically passing out of the range of legal investment. No legislative action concerning consolidations is immediately in sight.

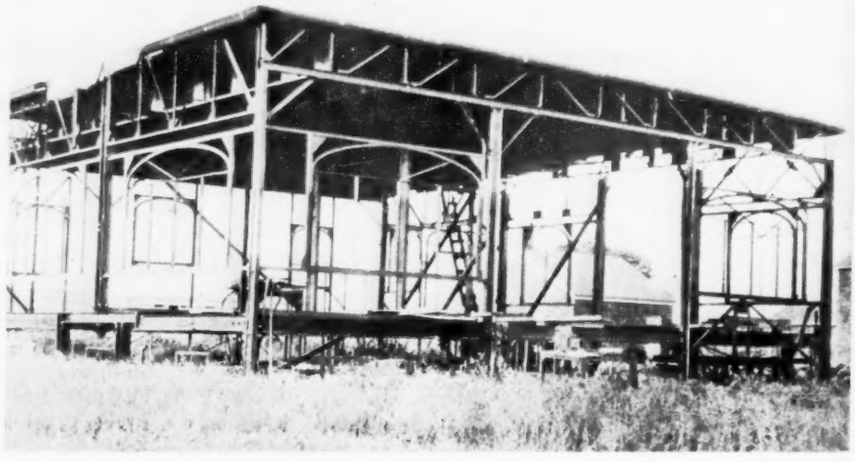
And on top of all this, congress must pass appropriation measures for the fiscal year beginning next July 1.

Will Ask Congress To Embargo Soviet Manganese

Washington — American manganese producers will appeal to congress for an early embargo on Soviet manganese ore, declares the American Manganese Producers association.

When congress convenes Dec. 7 the association, it is stated, will be ready to present to congress first hand information obtained by it in Russia and Europe, concerning methods of production and sale of manganese ore by the Soviet.

This information, according to the association, will substantiate charges of dumping. An embargo on Soviet



Acme Photo

BUILD YOUR OWN HOUSE—OF STEEL: This is what John P. Wilson, Waterloo, Iowa, powerhouse engineer, is doing in his spare time, using 2, 4 and 6-inch I-beams, riveted and welded, for the frames. His $13,000 home, mainly steel and glass, will be costlier than other types, but in the long run will be cheaper because of lower upkeep. Knocked-down steel frames, it is suggested, would assist the enterprising mechanic in building his own steel house

manganese would enable the domestic industry to resume operations, put many men back at work and obviate American dependence upon a foreign supply.

Confers on Capacities of Structural Shops

Washington—W. M. Wood, president of the Mississippi Valley Structural Steel Co., Decatur, Ill., and past president of the American Institute of Steel Construction, proposed to President Hoover at a conference, Nov. 12, that a statistical organization be set up "whereby the structural steel industry can measure the capacities of the firms engaged in this business."

Mr. Wood also conferred on the subject with Attorney General Mitchell. A plan proposed at the recent convention of the institute to help remedy certain evils of overcapacity involves determination of the capacities of structural steel fabricating shops in each district of the country.

"Personality" in Steel

Personality of timbre of tool and alloy steels, and development of methods to determine this factor, will be the subject of an address by B. F. Shepherd, chief metallurgist, Ingersoll-Rand Co., Phillipsburg, N. J., before the New York chapter of the American Society for Steel Treating, Monday, Nov. 16, at the Merchants Association of New York, Woolworth building.

Switching Rates Suspended, Call Consolidation Hearing

WASHINGTON — Interstate commerce commission has suspended for one month the increased switching charges prescribed for the Chicago switching district effective Nov. 10. Increases of 1 to 2 cents on two and three-line hauls thereby are postponed at least until Dec. 10.

The suspension, it is stated, is to permit negotiations between shippers and railroads, likely to lead to a compromise. Shippers of scrap and other raw materials as well as finished steel are fighting any increase.

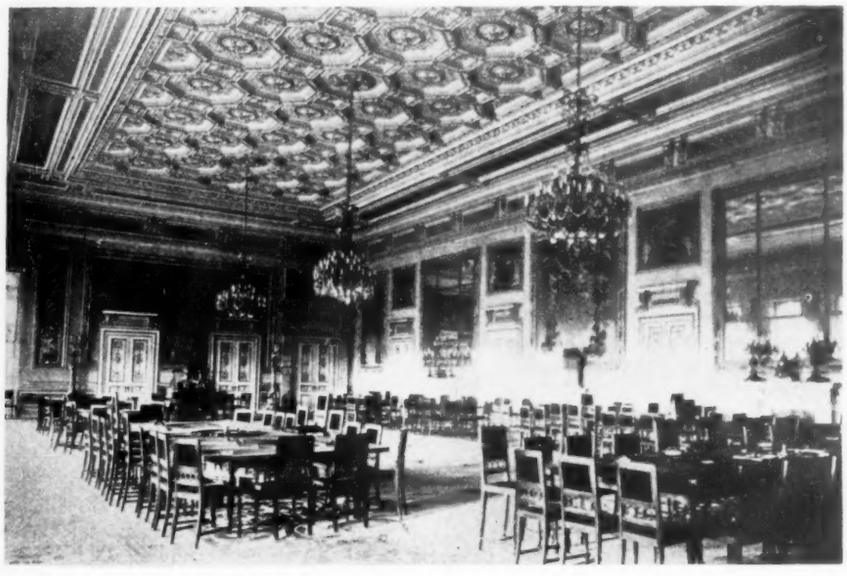
The Chicago switching situation is complicated by the fact that numerous industrial plants in the district are just over the line in Indiana. The Illinois and Indiana public service commissions refused to permit the railroads to apply on intrastate hauls the interstate rates prescribed by the commerce commission at Washington.

Railroad executives at New York Nov. 13 approved in principle the commerce commission's pool plan for distributing revenue resulting from the proposed per-car increase in freight rates.

Although little progress has been made, it is regarded as a certainty here that events are moving inescapably toward a reduction of railroad labor wage rates, with the hope that this will be accomplished by voluntary action of organized labor, thereby averting prolonged mediation.

Class I railroads in 1931 will pay an estimated $2,100,000,000 for wages and salaries, compared with $2,590,000,000 in 1930. A 10 per cent reduction in wages and salaries—salaries already having been reduced 10 to 20 per cent by most lines—would save $210,000,000. The recent freight rate advance granted by the commission will net the carriers slightly over $100,000,000, it is estimated.

Interstate commerce commissioin has reopened its final plan for railroad consolidation, announcing a hearing Jan. 6 before Commissioner Porter and Examiner Koch. The commission plan called for five great eastern systems; the railroads have agreed upon a 4-system consolidation, centering on the New York Central, Pennsylvania, Baltimore & Ohio and Chesapeake & Ohio. If persuaded, the commission is expected to modify its plan to conform with the 4-system program.



Wide World Photo

BALKAN PEACE CONFERENCE IN STEEL-WALLED PALACE: Fearing assassination, Adbul Hamid, the Red Sultan of Turkey, had the walls of his palace at Istanbul lined with steel plates. In this steel palace, recently a gambling casino, the Balkan conference met in October

Wrought Pipe Classified

Of wrought pipe and tubing, not made in rolling mills, produced in 1930 the census bureau reports 58.9 per cent or $73,354,000 was sold to consumers such as manufacturers, gas and oil pipe line companies, railroads, etc. Wholesale distributors took 40.6 per cent or $50,642,000; the remainder—0.5 per cent or $663,000—went to manufacturers' sales branches.

Donner Denies Rumor

Philadelphia—W. H. Donner, formerly head of the Donner Steel Co., Buffalo, now a unit of the Republic Steel Corp., denies a report that he is negotiating for the Wickwire Spencer Steel Corp.

Deny Pittsburgh Merger

New York—Reports that the Bethlehem Steel Corp. is negotiating for the Pittsburgh Steel Co., Pittsburgh, are denied both by Bethlehem officials and by Homer D. Williams, president of the Pittsburgh company.

In 1831 the United States had 14 blister steel furnaces in operation.

"Economic Plans" Decried at Acetylene Convention

ASSAILING widespread clamor of the press and politics for a plan to end depressions, Bernard J. Mullaney, vice president, Peoples Gas Light & Coke Co., Chicago, speaking before the thirty-second annual meeting of the International Acetylene association at Chicago, Nov. 11-13, declared that "all of this clamor is predicated upon an increase of governmental control of business—a straight-jacketing of business that would be disastrous."

"I am not depreciating the necessity of economic plans for business," Mr. Mullaney continued, "but the absurdity of numberless types of minds going into committee rooms or closets and framing a 'plan' for regimenting 120,000,000 people to mark time is obvious. One cannot run 100 yards at full speed and come to a dead stop on the goal line, and industry and business cannot push forward at full speed without running into a recessional swing afterward. About 90 per cent of our business is domestic. Let us go after that."

Mr. Mullaney asserted the tide in commerce and industry has turned, but apparently not far, and that 1932 should see gradual improvement of business, which should attain full vigor in 1933. He said much depends upon what congress does in the coming session.

Attendance Is Larger

Registration at the annual meeting numbered nearly 600, approximately 100 in excess of 1930 convention registration. A most unusual feature of this year's meeting was a comprehensive demonstration of welding tests, which attracted an overflow crowd of about 1200. These demonstrations were held Wednesday evening, Nov. 11, and delegations in attendance included members of the Western Society of Engineers, Armour Institute of Technology, Northwestern university, Chicago Architectural league, Greer Vocational college, and a large number of visitors.

Equipment for the demonstration was furnished by Tinius Olsen Testing Machine Co., Philadelphia; Wilson-Maeulen Co. Inc., New York; Watson Stillman Co., Roselle, N. J.; Bausch & Lomb Optical Co., Chicago; Baldwin Southwark Corp., Eddystone, Pa., and others.

Test demonstrations and explanations, conducted by John J. Crowe, Air Reduction Laboratories Inc., New York, Dr. A. B. Kinzel and W. B. Miller, engineers of the Union Carbide & Carbon Research Laboratories Inc., New York, included visual inspections; hammer and anvil nick-break tests; free bend test for ductility; tension test; hardness tests, including the file test; brinnel tests; Rockwell tests; specific gravity test; stethoscope or sound test; X-ray and gamma ray tests; compression and drift tests; crush tests; and hydrostatic internal tests.

An interesting change is occurring in the gas welding industry with the discovery that for welding of particular metals, an unbalanced flame will give better results with a marked reduction in costs, according to Glenn O. Carter, consulting engineer, Linde Air Products Co., New York, who discussed phases of gas welding.

Further Study Required

A reopening of the study of gas welding is likely, for the benefit of non-users, especially in view of lower costs obtainable, he added, pointing out that iron and steel react favorable to excess acetylene, while bronze reacts best to excess oxygen.

Railroad car scrapping by the line production method was described by T. M. Hamer, Air Reduction Sales Co., New York, a system in which cars were moved successfully each to 12 positions, at each of which one part or another of the car was removed or dismantled. This was done on a yard track parallel to a second track on which a traveling crane operated to load the scrap. Eleven cutters were employed on this line, scrapping 16 wooden cars per day, or 800 cars in about ten weeks, an average length of time per car per position of 30 minutes.

Piece-work rates were developed on a basis permitting the oxygen, acetylene and other materials used in scrapping the cars to be charged against the men. It was possible to use a smaller cutting jet orifice than generally has been used for car scrapping, making a narrower kerf, but the oxygen cutting jet pressure was not reduced materially because the operators claimed they could not otherwise blow slag and dust out of the path of the cut. The success of this method in scrapping wooden box cars was described as encouraging, as many wooden cars are likely to be scrapped soon.

Welding of the parts of the navy airship AKRON, while of many applications, all of which were gas welding, employed standard methods, and of relatively simple nature, it was pointed out in an illustrated talk by Irving B. Hexter, *Industry and Welding*, Cleveland.

Gas welding of rail bonds on propulsion current trackage, as well as for automatic signalling, has the advantage of low material and installation cost, and the gas welded bond affords much greater broken rail protection than does a long bond around the joint bars, it was stated by Pliny P. Pipes, engineer, Ohio Brass Co., Mansfield, O.

Welding has kept pace with improvements in overland pipe manufacture and installation, and during 1930 more than 70 per cent of all lines installed were oxyacetylene welded, it was asserted by H. E. Rockefeller, development engineer, Linde Air Products Co., New York.

This year and late last year, the industry has witnessed a favorable turn for the use of entirely or partially welded piping, it was stated by A. L. Byfield, of Himmelblau,

(*Concluded on Page* 59)

Financial News of Steel Industry

Granite City Steel Co., Granite City, Ill., reports net profit of $96,067, equal to 33 cents a share, against net of $155,130, or 53 cents a share, in second quarter, and $129,818, or 44 cents a share, in the third quarter of 1930.

For nine months, earnings have been $339,344 after depreciation and federal tax charges, equal to $1.16 a share. Over the comparable 1930 period the company earned $689,159, or $2.36 a share.

□ □ □

Pittsburgh Screw & Bolt Corp., reports for nine months ended Sept. 30, net loss after expenses, depreciation and interest of $208,354. This compares with net income of $2,628,221, equal to $1.75 a share, in the like 1930 period.

Japanese Visitors Guests Of Steel Treaters

Dr. S. Watanabe and K. Shibata, associated with the Nippon Takushuko Kaisha (Japan Special Steel Co.), Omori, Tokyo, accompanied by S. K. Tateyama, are spending several weeks in the United States making contacts and visiting steel plants. The Japanese company specializes in tool steels.

The three visitors were guests of the American Society for Steel Treating at lunch at the University club in Cleveland, Nov. 9. The luncheon, attended by approximately 20, was arranged by Mr. Eisenman, secretary of the society.

Unfilled Order Loss Slight; Statistics' Trend for Better

WITH declines in the United States Steel Corp.'s order backlog now consecutive for seven months, the January-June, 1927, consecutive decline of six months has been surpassed. Thus far in 1931 eight of the ten months have shown declines; only two, increases. The drop of 25,401 tons as of Oct. 31 approximated September's change downward of less than 1 per cent:

1930			
Jan. 31	4,468,710	51,517+	1.20+
Feb. 28	4,479,748	11,038+	0.25+
Mar. 31	4,570,653	90,905+	2.03+
April 30	4,354,220	216,433—	4.73—
May 31	4,059,227	294,993—	6.78—
June 30	3,968,064	91,163—	2.24—
July 31	4,022,055	53,991+	1.36+
Aug. 31	3,580,204	441,851—	10.9—
Sept. 30	3,424,338	155,866—	4.35—
Oct. 31	3,481,763	57,425+	1.68+
Nov. 30	3,639,636	157,873+	4.53+
Dec. 31	3,943,596	303,960+	8.35+
1931			
Jan. 31	4,132,351	188,755+	4.78+
Feb. 28	3,965,194	167,157—	4.04—
Mar. 31	3,995,330	30,136+	0.73+
Apr. 30	3,897,729	97,601—	2.24—
May 31	3,620,452	277,277—	7.11—
June 30	3,479,323	141,129—	3.89—
July 31	3,404,816	74,507—	2.14—
Aug. 31	3,169,457	235,359—	6.91—
Sept. 30	3,144,833	24,624—	0.77—
Oct. 31	3,119,432	25,401—	0.30—

Production of By-Product Coke Declines Further

Production of by-product coke continues to decline in September, while beehive showed a slight upturn. Stocks of coke at by-product plants continued to increase. Total output of all coke was 2,387,976 tons, about 1,200,000 tons less than in September, 1930, according to the department of commerce. A brief comparison follows:

In Net Tons

1930	By-product coke	Beehive coke	Total coke
Sept.	3,401,417	168,100	3,569,517
1931			
August	2,442,824	69,500	2,512,324
Sept.	2,310,176	77,800	2,387,976

Steel Casting Output At 18.5 Per Cent Capacity

With total September production of commercial steel castings at the lowest of 1931 or 1930, output of both railway and miscellaneous castings averaged 18.5 per cent. New orders were less at only 15.8 per cent capacity, of this latter group railway specialties being only at 8.9 per cent capacity. Principal manufacturers report the following to the department of commerce:

1930	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
Sept.	49,542	34.3	61,919	42.9
9 mo.	741,371	57.1	841,770	64.8
Oct.	45,552	31.6	59,522	41.2
Nov.	48,123	33.3	44,290	30.7
Dec.	49,387	34.2	46,290	32.1
Year	884,433	51.1	991,872	57.3
1931				
Jan.	46,810	32.1	46,294	31.8
Feb.	40,320	27.7	49,548	34.0
March	48,184	33.1	56,755	39.0
April	46,039	31.6	48,282	33.2
May	39,052	26.8	43,154	29.6
June	26,136	18.0	35,018	24.1
July	32,869	22.6	31,751	21.8
Aug.*	27,458	18.9	30,186	20.7
Sept.**	23,043	15.8	26,898	18.5
9 mo.	329,911	25.2	367,886	28.1

**Preliminary. *Revised.

Steel Barrel Industry Produces at 31.7 Per Cent

Operating at 31.7 per cent of capacity, the steel barrel industry in September turned up 0.1 per cent from August, but a decline in unfilled orders of both time classifications probably forecasts even lower operating schedules. September shipments were off slightly. Comparison by the department of commerce follows:

1930	Production	Shipments	Unfilled orders within 30 days
Sept.	564,927	565,204	253,745
9 mo.	5,909,948	5,908,077	.....
Oct.	616,121	619,558	275,778
Nov.	497,539	500,409	230,960
Dec.	412,283	406,327	188,902
Year	7,435,891	7,434,371	.....
1931			
Jan.	421,814	427,622	210,416
Feb.	450,134	449,485	231,738
March	550,583	554,332	242,626
April	591,399	600,566	253,622
May	610,788	618,801	248,138
June	552,955	549,781	239,290
July	580,565	581,450	238,258
Aug.	449,590	455,502	235,002
Sept.	451,562	452,960	205,676
9 mo.	4,659,390	4,690,499	.....

Steel Boiler Orders High

In point of number, September's orders for steel boilers were the highest for 1931 at 893 units ordered from the leading manufacturers, 73 in number, according to the department of commerce. These boilers had an area of 692,238 square feet and by comparison August's orders embraced 827 units of 594,698 square feet area.

For nine months of 1931, 6445 boilers have been ordered; over the comparable 1930 period 10,386 had been placed. The large majority in each case are stationary boilers.

Steel Plate Orders Are the Highest in 1931

Because of a marked gain in plate orders for gas holders and oil storage tanks, the total September bookings of 51 steel plate fabricators jumped ahead not only of the August level but also established a high for 1931. Improvement is to be noted in five of the six classifications, three of which are shown, according to the department of commerce:

In Tons

1930	Total	Oil storage tanks	Blast furnaces	Miscellaneous
Sept.	41,066	14,916	514	18,301
9 mo.	379,300	95,853	9,812	167,981
Oct.	30,197	4,518	231	18,665
Nov.	33,151	9,965	179	14,632
Dec.	26,787	5,118	135	13,227
Year	469,435	115,454	10,357	214,505
1931				
Jan.	27,518	2,598	111	20,845
Feb.	24,438	3,585	75	16,245
Mar.	31,056	2,538	833	21,697
April	29,916	7,749	25	17,783
May	26,210	2,411	230	20,370
June	22,806	4,679	356	15,817
July	27,261	4,136	51	18,785
Aug.*	24,282	1,138	125	18,331
Sept.	33,473	4,024	254	18,692
9 mo.	246,960	32,858	2,060	168,565

*Revised.

Stoker Sales Decline After Mid-Summer Spurt

Due to September's decline in the sale of mechanical stokers installed under water-tube boilers, total sales of those in the large commercial and high pressure steam plant classificatio, fell beneath the August total, and were the lowest since May. A comparison by the department of commerce from 21 of the leading manufacturers follows:

1930	Stokers sold	Fire tube boilers	Water tube boilers
September	128	71	57
9 mo.	963	467	496
October	92	46	46
November	71	41	30
December	53	35	18
Year	1,179	589	590
1931			
January	85	40	45
February	66	37	29
March	63	27	36
April	65	32	33
May	80	29	51
June	111	55	56
July	101	58	43
August	132	59	73
September	96	56	40
9 mo	799	393	406

Buys Alloy Welding

Pittsburgh Valve Foundry & Construction Co., Pittsburgh, has acquired the Alloy Welding & Mfg. Co., Pittsburgh, welders and fabricators of alloy steel.

Industrial Men in the Day's News

Thomas P. Robbins, President, Cleveland Hardware Co., Cleveland

Frank R. Bill Studio

IN his early business career he helped develop tha Tuscarawas county, O., steel industry.

GOING to Cleveland in 1887, he began work with the Cleveland Hardware Co., of which in later years he was vice president and treasurer.

HE now heads the same company with which he has been actively identified for the past 44 years.

THOMAS P. ROBBINS, formerly vice president and treasurer, Cleveland Hardware Co., Cleveland, was elected to the presidency of that company Nov. 9. Mr. Robbins was born in Niles, O., and comes from a family identified with the early Mahoning valley steel industry.

Following his education in the elementary and high schools of Niles, Mr. Robbins was identified early in his business career both with the Reeves Iron Co., Canal Dover, O., and New Philadelphia Iron & Steel Co., New Philadelphia, O., and through his affiliation with these two concerns helped develop the steel industry in Tuscarawas county, O. The latter company was later joined into the present American Sheet & Tin Plate Co.

In addition to his connections with the steel industry, Mr. Robbins was also in the banking business for a while at Niles and on two different occasions was employed by the Erie railroad.

Oct. 1, 1931, was the forty-fourth anniversary of Mr Robbin's identification with the Cleveland Hardware Co., which he now heads. In 1887, on that date, he took his first position with the Cleveland company, and through that time has worked in various capacities and more recently, prior to his election last week to the presidency, was vice president and treasurer.

Mr. Robbins enjoys golf and is a member of the Country and Mayfield Golf clubs of Cleveland. In addition, he is a member of both the Union and the Mid-Day clubs, also of Cleveland. He is also a member of the executive committee and a director, Union Trust Co., Cleveland.

R. L. GRAY, vice president and general manager, Sheffield Steel Corp., Kansas City, Mo., subsidiary of American Rolling Mill Co. Middletown, O., has been elected president, succeeding W. L. Allen, now chairman of the board.

Mr. Gray became associated with the Valley Steel Co., East St. Louis, Ill., after graduation from college, later becoming vice president. Upon the acquisition of that company by Laclede Steel Co., St. Louis, in 1918 he assumed the duties of chief engineer of the Laclede company. During the 1918-1923 period the company carried on an extensive construction program under his direction. Mr. Gray went with Kansas City Bolt & Nut Co., Kansas City, Mo., in 1923. When Sheffield Steel Corp. became successor to the Kansas City company in 1925 he was named vice president and general manager.

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C. A. Liddle, president, Pullman Car & Mfg. Corp., Chicago, has been elected president, Standard Steel Car Co., Pittsburgh, succeeding Patrick H. Joyce who has become chairman of the board.

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William H. Jacobi, formerly general manager,Keokuk Steel Casting Co., Keokuk, Iowa, subsidiary of the Springfield Boiler Co., Springfield, Ill., now is affiliated with the Continental Roll & Steel Foundry Co., East Chicago, Ind., in the capacity of sales engineer, specializing in cast steel pressure vessels and fittings of all kinds, both rough and finished.

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Donald M. Scott, former vice president, Gould Coupler Co., Buffalo, has been elected vice president of Buffalo Electric Furnace Co., Buffalo. Thomas H. Nelson, formerly with the Midvale Co., Philadelphia, and Dr. Gilbert E. Seil, E. J. Lavino & Co., Philadelphia, have been added to the Buffalo Furnace Co.'s engineering staff.

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Charles E. Adams has resigned as president, Cleveland Hardware Co., Cleveland, and has been named honorary chairman of the board. Thomas P. Robbins has succeeded Mr. Adams as president. Other officers named at the company's meeting Nov. 9 are Malcolm L. McBride, treasurer; Henry S. Sherman, secretary. Edgar E. Adams has retired as vice president and general manager.

Directors named in addition to the

above are: Parmely W. Herrick, Alva A. Gay, F. H. Chapin, Leigh H. Elliott and E. S. Hanson.

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C. M. Warner, formerly with F. H. Crawford & Co., has joined the organization of Ritterbush & Co., 30 Church street, New York, dealers in steel and metalworking equipment.

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H. H. Edens has resigned executive connections with the Lausen Co., New Holstein, Wis., to become general manager, Kiel Machine Co., Kiel, Wis., well-drilling equipment.

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Phillip L. Buxton, Worcester, Mass., has been elected president, Perry, Buxton & Doane Co., scrap dealers, Boston. Mr. Buxton, also treasurer of the company, replaces George B. Doane, for many years president, and will make his headquarters in Boston.

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Charles V. Franklyn, who for many years represented Colonial Steel Co., Pittsburgh, in the midwest and more recently Braeburn Alloy Steel Corp., Braeburn, Pa., has become special representative of the Cyclops Steel Co., Titusville, Pa., with headquarters at 1203 S. Seventh street, St. Louis.

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O. M. Reif, vice president, Harbison-Walker Refractories Co., Pittsburgh, who retired several years ago from active management in the company, has resigned, but remains a director. P. E. Mossman has been elected a director and vice president, in charge of finance.

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George G. Shallenberger has been named general manager, Great Northern Iron Ore Properties, St. Paul, succeeding the late Lewis D. Newman. Mr. Shallenberger was formerly with the First National Bank, Chicago, in charge of financing public utilities.

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A. H. Ingen-housz, director, and P. R. B. van den Berg, sales manager, Koninklijke Nederlandsche Hoogovens en Staalfabricken, Ymuiden, Holland, producer of Royal Dutch iron, are visiting in this country. They contemplate visiting various steel plants over the next two or three weeks.

Steel Club Elects

Philadelphia—Steel Club of Philadelphia has elected the following officers for the ensuing year: President, T. C. Ham, Jones & Laughlin Steel Corp.; vice president, William O. Lange, Phoenix Iron Co.; secretary and treasurer, F. L. Stephenson, Bethlehem Steel Co. Alexander Cameron, Lukens Steel Co., and Horace Merriman, Alan Wood Steel Co., were elected to the board of governors.

Obituaries

WALTER C. STONE, 68, former manager of the wire department, Interstate Iron & Steel Co., Chicago, division of Republic Steel Corp., Youngstown, O., died Nov. 7 at Rochester, Minn. A native of Lawrence, Mass., Mr. Stone went to Cleveland in his youth. For more than 25 years he was in the sales department of the American Steel & Wire Co. at Cleveland. Later he went to Chicago, where he became connected with the Interstate company.

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John W. McKee, assistant treasurer, National Tube Co., Pittsburgh, died Nov. 7 at his home, Dormont, Pa.

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Walter S. Essick, 68, inventor of many mechanical devices, died at Reading, Pa., Nov. 7.

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Bruce C. Davey, 40, vice president, Denver Equipment Co., Denver, died at Chicago recently.

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Thomas Spence, 81, president, Rundle-Spence Mfg. Co., Milwaukee, died Oct. 28.

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Leon C. Deckard, representative at Erie, Pa., for Barney Machinery Co., Pittsburgh, died Nov. 1.

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Charles D. Heald, 46, director, City Engineering Co., Vacuum Tool Co., and Seifreat-Elsted Co., all of Cincinnati, died Nov. 8 at Oakwood, O.

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Gustav Erbe, 79, president, Yawman & Erbe, Rochester, N. Y., office furniture and equipment, died Oct. 30. He had been associated with the company for more than 50 years, having founded the company in 1882 with the late Philip T. Yawman.

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Philip A. Koehring, 55, president, National Equipment Corp., Milwaukee, died Oct. 31. After spending several years in developing concrete mixers and road building machines, he founded the Koehring Machine Co. in Milwaukee in 1910, which became nucleus of the National Equipment Corp. in 1928.

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Lewis Taylor Robinson, 63, engineer in charge of the general engineering laboratory, General Electric Co., Schenectady, N. Y., died Nov. 3. Dr. Robinson was a veteran electrical technician, one of the widest known electrical engineers in the profession, and for 12 years the head of one of the principal laboratories of General Electric Co.

Dr. Robinson had received 30 patents. In 1929 he received the honorary degree of Doctor of Science from Union college. A silver medal was awarded to him at the St. Louis exposition of 1903 for collaborating in the electrical exhibit of the General Electric Co.

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Henry G. Bechtold, a superintendent for almost 40 years of the Cleveland Frog & Crossing Co., Cleveland, died Nov. 8.

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Anson Mark, 64, vice president of Clayton Mark & Co., Chicago, pipe manufacturer, and a founder of the former Mark Mfg. Co., of Evanston, Ill., and Zanesville, O., died Nov. 12.

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George A. Hart, manager, Melrose Park works, Melrose Park, Ill., National Malleable & Steel Castings Co., Cleveland, died Oct. 19 at Melrose Park. A graduate of Lehigh university, he was employed first by Bethlehem Steel Co., Bethlehem, Pa., and when the National Malleable company acquired Latrobe Steel & Coupler Co., Melrose Park, Ill., he was made manager of the latter division. He was a member of the American Iron and Steel institute.

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Richard T. Crane, 58, president, Crane Co., Chicago, died at New York Nov. 7. He was born in Chicago and after graduating from Sheffield Scientific school, Yale university, in 1895, he entered the employ of Crane Co., spending a year in the foundries and a year in the city sales department. In 1898 he was made second vice president of the company and in 1914 was elected president. Mr. Crane's father, who died in 1912, made him the principal beneficiary of his $10,000,000 estate. Much of this fortune and money which he made subsequently he spent in philanthropies.

Stabilization Program for Minerals Is Planned

American Mining congress, through James F. Callbreath, secretary, Munsey building, Washington, announces a series of group conferences at which mineral taxation, modern mining methods and stabilization of mineral industries will be discussed by committees in conjunction with the annual meeting of the congress Dec. 3-5, at the Mayflower hotel, Washington.

S. Livingston Mather, secretary, Cleveland-Cliffs Iron Co., Cleveland, and president of the congress, is expected to present a program for minerals that will include recommendations for steps to be taken toward the solution of some of the industry's problems.

Here and There in Industry

EASTERN ROLLING MILL CO., Baltimore, is installing two galvanizing pots and will offer a complete range of galvanized sheets in the seaboard markets. John M. Remsen, for years associated with the Berger Mfg. Co., Canton, O., has been made assistant sales manager and will direct merchandising of the new products. Eastern Rolling Mill Co. previously has confined its production to full-finished automobile and furniture stock and black sheets. The plant has 12 mills with an annual capacity of 95,000 net tons.

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Pal Blade Co., Notre Dame street east, Montreal, Que., has begun operations in its new plant, with capacity for 35,000,000 razor blades a year.

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Adair-Day Corp. has removed its offices from the Widener building to 1018 Girard Trust Co. building, Broad street and South Penn square, Philadelphia.

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Standard Iron Works, Edmonton, Alta., has completed its new plant and started operations. This company is a subsidiary of the Dominion Bridge Co.

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Foote Bros. Gear & Machine Co., Chicago, has appointed Neille LaVielle Supply Co., Louisville, Ky., its representative for the sale of its gears and speed reducers.

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Industrial Plants Corp., New York, will sell at auction Nov. 17 an experimental machine, tool and die shop on the premises of the Presto Machine Products Co., 70 Washington street, Brooklyn, N. Y.

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Adjustable Bearing Co. and C-A Mfg. Co., both of Indianapolis, C. A. Maris president of both, plan to move to Crawfordsville, Ind. The former manufactures automobile bearings and the latter woodworking tools.

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Canadian Car & Foundry Co., Montreal, Que., has made plans for formation of an all-Canadian car company to specialize in leasing tank cars for use on Canadian railroads for transportation of various liquids.

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Norge Corp., Detroit, subsidiary of Borg-Warner Corp., Chicago, has acquired the Alaska Refrigerator Co., Muskegon, Mich., manufacturer of refrigerators for the last 50 years. The Borg-Warner unit will have a capacity of about 1500 cabinets a day. Norge Corp. sales this year have been far ahead of 1930.

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Wandtke Pattern Works, 226 South Union street, Kokomo, Ind., has been moved to Anderson, Ind. A brass and aluminum foundry will be established in connection with the pattern works. Harry J. Wandtke is proprietor.

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Wilkofsky Bros. Inc., Beaver Falls, Pa., has purchased the Murphy Furnace & Foundry Co., Beaver Falls, and will continue to operate the plant. William J. Wilkofsky is general manager.

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Automatic Products Co. and National Machine Products Co., both of Detroit, have been licensed by the Dardelet Threadlock Corp., New York, to manufacture products threaded with the latter's self-locking screw threads.

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Brooklyn Vault Light Co., 234 Monitor street, Brooklyn, N. Y., has been succeeded by Hinrichs Foundry & Vault Light Co. Inc. This represents only a change in name, and officers and personnel will remain unchanged.

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Moltrup Steel Products Co., Beaver Falls, Pa., has opened a Detroit office at 806 Fisher building. H. S. Hawthorne, formerly Detroit office manager for the Firestone Tire & Rubber Co., has been appointed district manager of sales there for the Moltrup company.

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William H. Muller & Co. Inc., 122 East Forty-second street, New York, has appointed the following as agents in the sale of Royal Dutch pig iron: Carson, Marshall & Co., Franklin Trust Co., Philadelphia; Phillips Isham, 30 Church street, New York, with territory in Connecticut, northern New Jersey; William J. Breen, 192 Parkway, Winchester, Mass., with territory in Massachusetts and Rhode Island. New York City territory will be covered directly by the Muller company.

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Wayne Pump Co., manufacturer of dispensing pumps for petroleum products, is concentrating activities at its plant at Ft. Wayne, Ind., by erecting new buildings for the Fry Equipment Corp. division, of Rochester, Pa. The Fry company, acquired late in 1929, added lubricating oil pumps to the Wayne products.

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Ampco Metal Inc., 3830 West Burnham street, Milwaukee, has made one of its largest shipments of bronze alloy castings to be used as forming dies by the Baldwin-Southwark Corp., Philadelphia, in production of 16-inch oil line pipe. It totaled about nine tons. Another large shipment recently was to Argentina.

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Geometric Tool Co., New Haven, Conn., has appointed the Drake-Grau Tool & Mfg. Co. Ltd., 1520 East Slauson avenue, Los Angeles, its exclusive agent for sale of its products in southern California. The Tool Equipment Co., Los Angeles, for many years exclusive representative on the Pacific coast for the Geometric company, has been dissolved.

Business Is Better

FIFTEEN hundred men will be given work at the Schenectady, N. Y., plant of the American Locomotive Co. as the result of an order placed recently with that company for ten freight locomotives by the Lehigh Valley railroad.

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Los Angeles reports employment is at the highest point since March.

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Applications for employment in New York declined 16 per cent in the week ended Nov. 4.

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Sessions Foundry Co., Bristol, Conn., now working four days a week, expects to increase to five.

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Pipe foundry of Colorado Fuel & Iron Co. at Pueblo, Colo., resumed Nov. 9, employing 75 men, after being idle several months.

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Locomotive and car repair shops of Missouri Pacific railroad at Sedalia, Mo., closed for some time, have been reopened on a 3-day week basis for an indefinite period.

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Railroads of the United States hauled 1,812,641 tons of scrap in the second quarter, freight charges being $3,634,175, compared with 1,680,442 tons, with a freight revenue of $3,395,080 in the first quarter.

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Despite the depression Chicago boasts 1061 manufacturing plants, representing 358 separate lines, employing 100 or more persons. Hawthorne works of Western Electric Co., with 15,000 men and 9000 women, is Chicago's largest employer.

MIRRORS of MOTORDOM

DETROIT

CONSIDERING the proximity of the January shows and the fact it will take the volume producers three to four weeks to assemble enough cars to completely stock their dealers, automobile manufacturers' releases of steel and parts are meager.

In a majority of cases, both automobile manufacturers and parts makers have made commitments with their sources of steel supply, but except in isolated instances have not given the word for production. One exception is bolts and nuts, for which substantial releases have been issued by some of the low-price car interests.

There is, however, a well-founded report that Ford is shortly to release enough material to carry him through 60 to 90 days of production. This, it is expected, would generate a widening circle of production, and with labor assured of several months' employment rather directly stimulate automobile sales.

Assembly Lines Are Idle

Assembly lines are gathering dust in Detroit these days. Partly hesitation over the unfavorable buying market for cars, partly formulation of last-minute plans on comparatively minor points for their 1932 models, keep Chrysler, Dodge, Graham-Paige, Lincoln, Oakland-Pontiac, Olds, Chevrolet, Hudson and Studebaker assembly lines down.

With such a picture continuing, with weekly total production not netting 10,000 cars, November bids certain to drop beneath the estimated 85,000-90,000 assemblies of October. A tremendous reversal of form the last two weeks of this month would be needed for the result to be otherwise.

Strangely, at present a middle-priced car is leading all others in production. Buick, with its formal announcement made, is assembling about 415 to 420 cars daily, 5 days a week. November is counted on for production of 9000 Buick models.

Willys-Overland and Plymouth, on 4 and 2 day weeks, respectively, fall in the next bracket, each making about 1200 models a week.

Chevrolet has assembled nothing but test models of its 1932 series. Ford's activity is clouded, though Model A's assemblies are authoritatively said to have ended.

Cadillac-LaSalle is working—but only with the schedule in mind of making 400 8's, 12's and 16's in November. Hupp, De Soto, Packard and Reo activity is desultory.

Auburn-Cord Resumes

Hupp's stock of new cars is known to be low. Assemblies at both Cleveland and Detroit were about 85 models, against 150 the week prior.

Nash showed a slight curtailment, the plant working 5 days, around 100 models a day. Packard continues to turn out close to 50 units a day, on a 5-day basis.

Reo's November schedule will be virtually a duplication of last month, or almost 1300 passenger cars and trucks.

Auburn-Cord's weekly assembly operations at 5 days, 35 units a day, have resumed after the recent shutdown.

Dodge's truck division makes around 60 units, 3 days; DeSoto, in a slight flurry, is assembling 100 models, working 2½ days a week.

Assemblies of De Vaux-Hall both at Grand Rapids, Mich., and Oakland, Calif., continue about 20 models a day, 4 days a week.

One deduction is evident from the low bids which partsmakers have been submitting to automobile manufacturers. It is, that the partsmakers expect to get their steel cheaply from steel producers.

Murray Body has not as yet begun production of Ford frames at its new plant at Ecorse, Mich. In fact, conditions at this plant are very similar to conditions in most of the other 5500-odd parts suppliers to Ford the country over.

Production has not begun because releases have not come through from Dearborn. True, the materials and parts have been contracted for, but getting instructions to proceed and a shipping date from Ford's is another thing.

Ford's radiator suppliers and his three large shock absorber makers all have the same expectant hopes for releases. Ford has commitments for shock absorbers for 50,000 cars.

Murray's frame plant steel needs, until peak production returns, will be far from the circulated reports of 400 tons of steel daily. And as late as last week the business had not been closed on, though the proximity of the Great Lakes Steel Corp. mill at Ecorse is generally conceded in its favor.

Ford Goes to Alternating

About 26,000 motors at Ford Motor Co.'s Dearborn plant are being changed from direct current to alternating . . . Retail financing of new cars in September averaged $571 per car, of used car $267. This figure was average for 67,644 new cars, 103,180 used cars sold in the month. . . . Ironing out of clutch difficulties on the new Ford is reported to be withholding several releases on material for the model. . . . Cadillac is experimenting with a large airplane type tire to take only 8 pounds air pressure. . . . Great Lakes has two open hearths on now seven days a week, against three formerly, that were banked over the week-end. . . . Midland Steel Products Co. is now making complete rear axles for Hudson at the old Parish & Bingham plant in Cleveland, orders for machine tools having been placed recently.

EDITORIAL

"Welderies" Now Enter Industrial Picture

IF PRESENT indications can be taken at face value an important new industry now is in the making. It is the manufacture of beds, frames and numerous other machinery parts, using rolled steel as the basic material and employing cutting and welding as the principal fabricating processes. For want of a better name, shops comprising the infant industry are known as "welderies."

A hint of the possibilities of this new enterprise was afforded by discussion at one of the sessions at the recent meeting of the American Institute of Steel Construction. It was stated that an exhaustive study reveals a potential consumption of rolled steel amounting to 4,000,000 tons annually. This tonnage, believed by its sponsors to be conservative, is equal to 10 per cent of the total rolled steel production in the banner year of 1929. A promising new outlet of such gratifying proportions cannot be dismissed lightly by steel producers, nor can the opportunity to utilize this process of fabrication on such a large volume of work be overlooked by manufacturers of parts for machinery and equipment.

Spurred by Welding Enthusiasts, Industry Emerges from Pioneering Stage

Until recently the interest of steelmakers in welded machine parts of rolled steel lagged far behind that of companies and individuals identified primarily with welding practice and equipment. In fact, during a period of a decade or more practically the entire burden of pioneering in this field was borne by a small group of welding enthusiasts. Several manufacturers of welding equipment, a few independent welding engineers and a handful of executives in plate fabricating shops were largely responsible for creating the industry and nursing it along to the point where its possibilities were recognized by others.

During the past two years progress in the art has been accelerated noticeably. Thousands of applications of the process—many of them executed under commercial and not experimental conditions—have demonstrated its broad scope. Today one steel company is directly interested in the new industry and a half dozen others are studying it closely; a number of companies are operating commercial welderies exclusively; and more than 150 fabricating shops, equipment builders, machinery manufacturers and others are engaged in the business either as a side line to their regular work or as a supplementary department to their other fabricating operations.

No one can predict how far this industry will go or in what direction it will advance most rapidly. However, now that much of the costly pioneering work has been done and sufficient knowledge and experience is available through expert consulting advice to insure results without resorting too frequently to the painful "trial and error" method, the uncertainties which restrained many companies from entering the field have been largely eliminated. For this reason it is likely that the next few years will witness a rather widespread acceptance of the weldery idea.

Experience and Expert Guidance Essential To Successful Adaptation

The business probably will appeal particularly to plate and structural fabricators and to builders of machinery and equipment. Many companies in these fields have personnel and equipment which with slight modifications can be adapted readily to the problems of the weldery. However, no company should take up this new business without first providing for competent engineering advice and supervision. Dozens of firms have wasted thousands of dollars needlessly because in trying to adopt welding without adequate experience and without the assistance of expert counsel, their engineers unwittingly have made mistakes which experienced welding authorities had encountered and corrected years ago in their pioneering work. Failure to profit from the experience of others is a luxury few prospective operators can afford.

Whether the weldery will develop eventually as a jobbing establishment comparable to a commercial forge shop or foundry, or whether it will emerge as a departmental adjunct in engineering plants still is an open question. Probably it will find service in both capacities. At any rate, its progress to date has won it a place of importance in American industry. Certainly its possibilities have been demonstrated sufficiently to warrant the attention not only of machinery manufacturers, who are potential customers of welderies, but also those fabricators and others who are logical operators of welderies.

"Preferable, More Logical"

—SAY READERS OF *STEEL*, SINCE DATE OF ISSUE WAS ADVANCED FROM THURSDAY TO MONDAY

SUBSCRIBERS continue to voice their approval and appreciation of the recent change in date of issue, by which STEEL now is delivered Monday morning:—

"We approve your change in issue date because now STEEL brings us on Monday morning complete up-to-date reports of the whole previous week whereas hitherto the Thursday delivery meant only a partial report of the week's developments. . . . . By delivering over Sunday the publication does not miss out on any important business day. We think the change has resulted in improved service to us."

"I have heard quite a few comments on STEEL from our customers. They like the change (in issue date) very much. They seem to feel that the presentation of the news of the calendar week is preferable and more logical than the previous practice of publishing reports of a split week."

"Your change in issue date is a ten strike. To me it is the most important of the improvements you have made in recent months."

STEEL

For forty-eight years—IRON TRADE REVIEW

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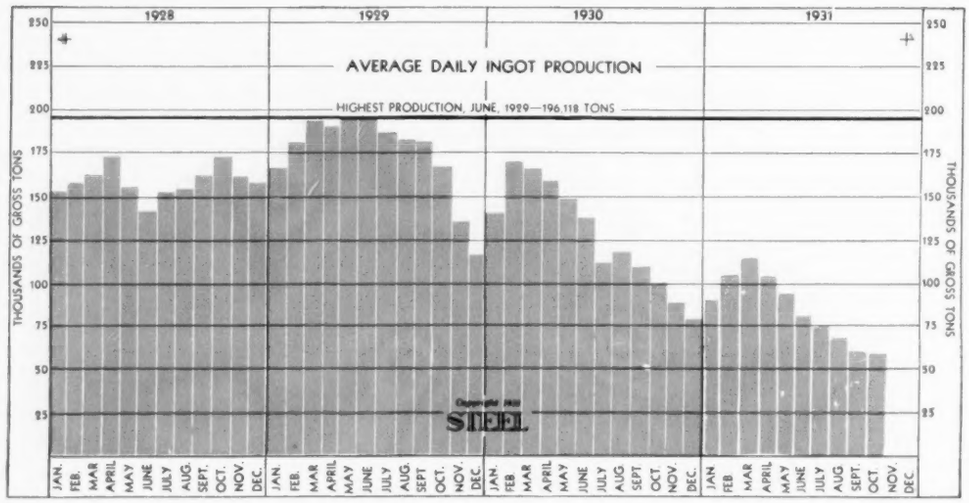
THE BUSINESS TREND



1930

Oct.	99,724
Sept.	109,245
Aug.	117,722
July	112,393
June	136,741
May	147,515
April	158,057

1931

Oct.	58,977
Sept.	59,523
Aug.	66,133
July	72,544
June	79,843
May	96,365
April	104,711

November May Witness Upturn in Output

BUSINESS is entering an interesting period. In the mills and factories prospects for increased rates of operations are brighter than in many months. In some cases, schedules already have felt the influence of more liberal specifications of materials. In the main, however, improvement is not marked and recovery, where it is apparent, is proceeding slowly.

In the steel industry a moderate betterment in demand points to the possibility that November production will be slightly above October figures. Output of steel ingots in the tenth month at the rate of only 27.76 per cent of capacity and production of pig iron at only 26.3 per cent gives the industry more than a fighting chance to show gains in both departments in November.

Improvement in Steel Company Earnings in Fourth Quarter Is Likely

This is especially true when it is considered that the reduction in pig iron was the smallest in any month of the six-month period of steady recession and that already in November the steel ingot rate has advanced from an actual averge of below 28 per cent in October to an estimated rate of about 31 per cent in the week of Nov. 9.

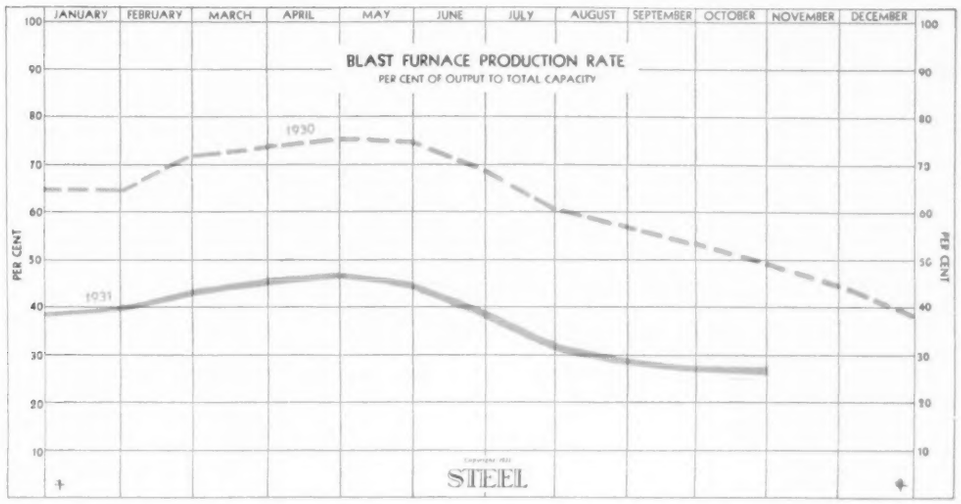
There also is a possibility that in general steel company earnings will show a slight improvement in the fourth quarter. Many wage reductions were not put into effect until shortly before the end of the third quarter. The full effect of these economies will be gained in the final quarterly period. In the 30 years of its existence the United States Steel Corp. has reported fourth-quarter earnings in excess of third-quarter earnings in 14 years. In the remaining 16 years, earnings slumped off in the final period.

The first applications to the National Credit Corp. for assistance are beginning to filter through its offices. However, it is apparent the demand will be lighter than was anticipated. After the crisis is far in the background, it may be found that the greatest value of the credit plan lay not in the actual relief it afforded but in the degree in which it helped to re-establish public confidence.

Better Control of Banking Situation Is Helping To Restore Confidence

Apparently the banking situation now is well in hand. The number of failures has dropped to a low figure, and many closed institutions have reopened. Thus a serious threat seems to have been met and successfully overcome.

Commodity prices continue to furnish the chief inspiration for the buoyant tone of business sentiment. In spite of momentary interruptions in the upward movement of grain prices, the majority of observers are convinced that the trend of commodities is definitely on the upgrade. Cotton last week joined the parade, along with a number of other commodities. The fact that the good news of the past few weeks has emanated at a time when the country is in the midst of a rousing campaign for community fund support has given a wartime touch to the business atmosphere. It is difficult to ascertain how much of the greatly improved tone of business is due to the contagious exhilaration of a high powered national relief effort and how much is the result of actual advances in business recovery.



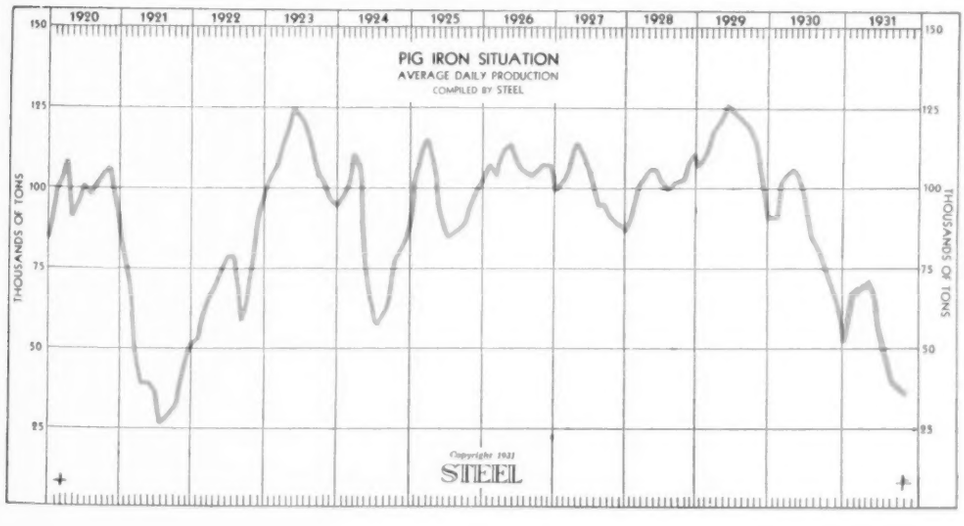
Per Cent	1931	1930
Oct.	26.3	49.6
Sept.	27.0	53.8
Aug.	28.7	57.8
July	32.7	60.3
June	37.9	69.3
May	44.7	74.2
April	46.5	75.4

Rate of Operations Decline With Only 69 Stacks in Blast

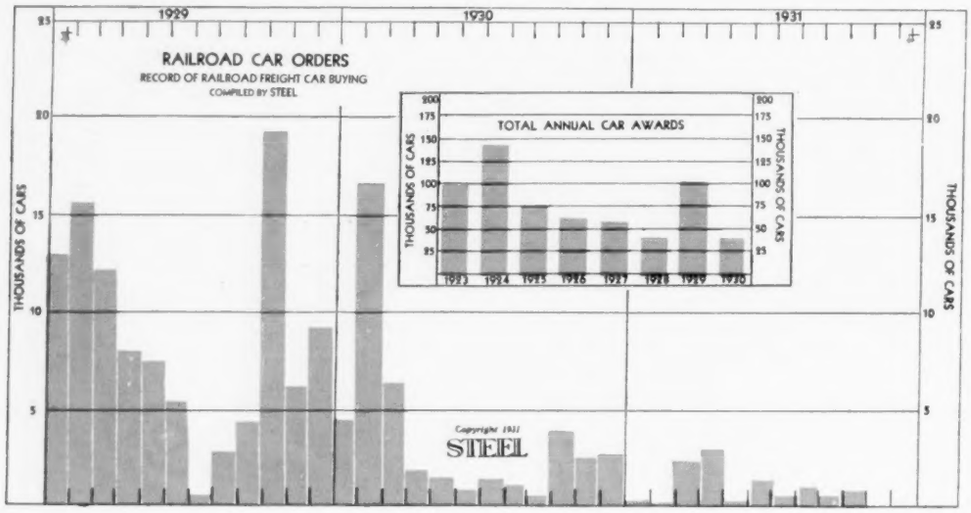
The October rate of operation in the pig iron industry was 26.3 per cent compared with 27 per cent in September and 28.7 per cent in August of this year and 49.6 per cent for October, 1930. Furnaces in blast on Oct. 31 numbered 69, with 12 stacks having been banked and seven blown in during the month, resulting in a net loss of 5 stacks. Since the peak of 1931 in March, when 116 stacks were active, 47 furnaces have been taken off the active list. The number of stacks in blast at the end of the month had shrunk to the low established in July and August in 1921. Recovery in that year was rapid, the number of active stacks jumping from 69 in August to 123 in December.

Pig Iron Production Drops; Decline Is Smallest in Six Months

Pig iron production continued on a downward trend, bringing the average daily rate for October to 37,831 gross tons compared to 38,947 tons for September. The October recession was the sixth successive downward step; however, the loss in average daily rate in both actual tonnage and percentage was the smallest in that period. September and October rates were the lowest since September, 1921, when 32,859 gross tons represented the average daily output for the month. The greatest downward sweep of the trend occurred in 1921 when average daily production declined from 106,075 tons in October, 1920, to the all time low of 27,892 tons in July, 1921.



	1931	1930 Tons
Oct.	37,831	69,851
Sept.	38,947	75,893
Aug.	41,264	81,455
July	47,170	85,110
June	54,599	97,817
May	64,355	104,564



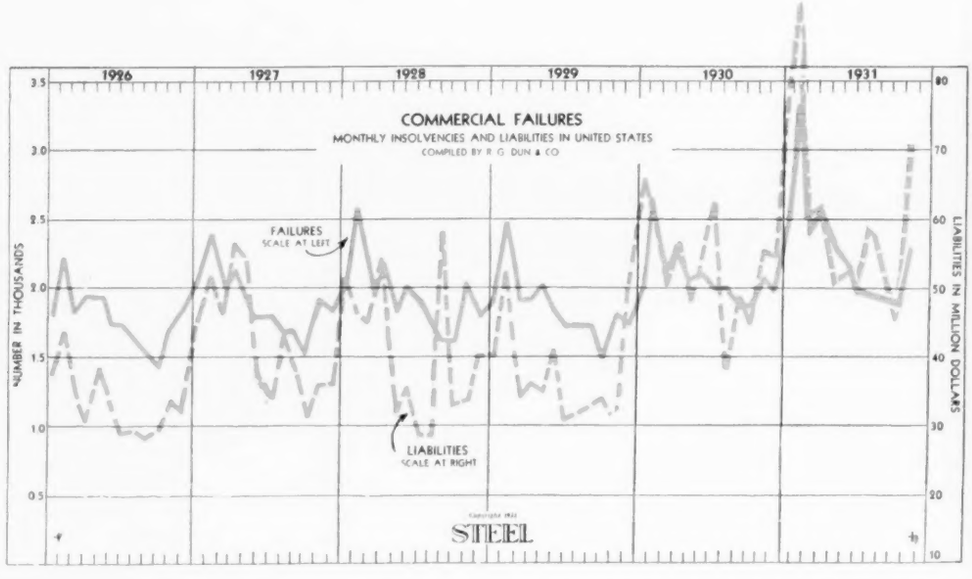
	1931	1930
Oct.	780	4,116
Sept.	503	576
Aug.	1,104	1,111
July	367	1,389
June	1,910	998
May	20	1,392
April	2,798	1,997

Freight Car Awards Make Slight Gain; Ten-month Total Is Low

Freight car builders received orders for 780 cars in October. This is an increase over September when 503 cars were booked. In August awards totaled 1104 cars. October bookings are the lowest for that month since 1922. For the first ten months of the present year aggregate awards were 9798, compared with 39,796 for the same period of 1930; 90,034 in 1929 and 33,824 in 1928. Activity in recent months has been about as low as in the slack months of 1921, and 1931 has been a year of record lows. Because of impaired earnings and light traffic railroads are resorting to rebuilding or repairing and are limiting purchases to the barest essentials.

Record of Commercial Failures Shows Sharp Increase in October

Monthly insolvencies and liabilities in the United States took a sharp jump in October, according to the figures issued by R. G. Dun & Co. The number of defaults in October was 2362 which establishes a new record for that month. There is no previous report for October showing a larger number than the 2124 business defaults that occurred in that month last year. A moderate increase over September usually occurs in October, but the gain this year was equal to 22 per cent. Liabilities also increased sharply from $47,255,650 in September to the record October figure of $70,660,436. The larger liabilities for October were mainly due to an increase in the number of large failures.



Liabilities	
Oct., 1931	$70,660,436
Sept., 1931	47,255,650
Oct., 1930	56,296,577

Number	
Oct., 1931	2,362
Sept., 1931	1,936
Oct., 1930	2,124

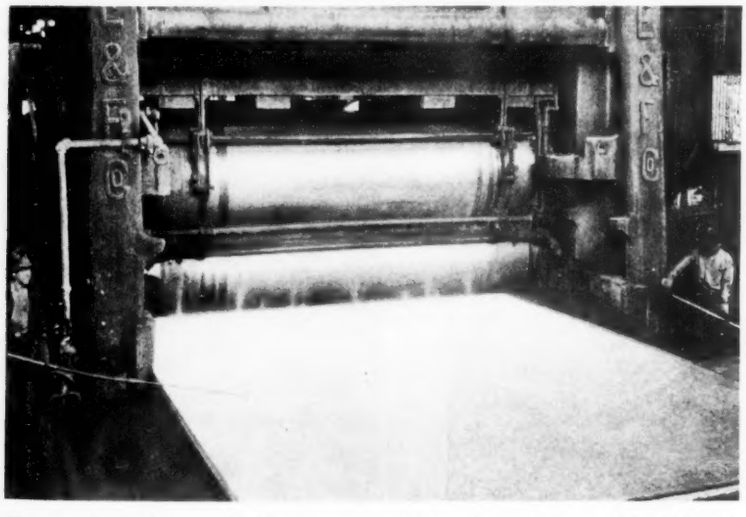
THIS immense steel slab, 22 inches thick, was gas cut and presents a remarkably clean surface. Cuts of this thickness are said to be not unusual

Machine Gas-Cutting Heavy Plate

BY L. M. CURTISS
Lukens Steel Co.

MACHINE gas-cutting of heavy steel plate made its first appearance in England about 1906, and while it was fairly successful at that time its commercial growth was slow. The trouble encountered in the early stages of its development was due to the machine's lack of range, inflexibility, and its inability to give good quality cutting gages of plate where the demand would be the greatest. The torch problem, which required years for its solution, was not simply a matter of pressures and tip sizes, but also of design, because all passages must be of the proper size and proportion with outlet orifices perfect in mechanical workmanship so that the gases will have an unhampered flow.

It is difficult to picture the tremendous opportunities which this art has offered. Previous to the use of oxygen, heavy plate was limited practically to a 2-inch thickness in gage, and had to be sheared mechanically in straight lines with the usual out-of-flat condition characteristic of all sheared material. Compare this to the 20 to 30-inch cut, which can be made with oxygen today, not only in straight lines, but also in a curved or irregular direction, with the cut edge either vertical or beveled and without the usual shear distortion. This progress in heavy cutting has created in the steel world a demand for heavy material to be used as machine parts, or in high-pressure vessels where elevated temperatures must be withstood. Today there are thousands of uses for gas-cut heavy steel plate which can be met in a few hours with the aid of simple templates, in place of complicated patterns, thus avoiding days of preparation and insuring reliable shapes cut from rolled steel.



Heavy steel plate, suitable for gas cutting, is rolled on this 206-inch plate mill, claimed to be the largest in the world

During the development of gas cut-

ting, the first thought was to "make the cut," especially on extreme thicknesses, and secondly to give the edges a smooth, pleasing appearance. These two aims required years of study, for it was necessary to determine the proper machine speed, the correct pressure and volume of oxygen and the proper tip size for each and every gage cut.

Little thought was given to the actual cost of the operation as the advantage to be derived was so great that it overshadowed the expense of cutting. Cutters generally were paid a straight hourly rate, and were given general instructions by the foreman on how the job should be done. An incentive wage payment plan was considered illogical as a large plate could be spoiled easily by hurried work, and because the labor involved in cutting was not the initial consideration. The cost of oxygen and acetylene consumed in cutting heavy thicknesses is several times the cost of the labor involved. There was the danger that an operator, in accomplishing his task in the least possible time, would use excessive oxygen, thus more than counteracting any benefit derived from fast work.

Incentive Plan Devised

Lukens Steel Co., Coatesville, Pa., tackled this problem with many misgivings and after much study devised a payment plan whereby each man was paid for the exact amount of work accomplished, and in addition, a bonus was paid on the amount of oxygen saved below a set standard; a penalty also was applied for poor workmanship. This plan was successful from the beginning, and each succeeding month showed an improvement in labor efficiency. Oxygen consumption instead of climbing, as feared, took a downward course, which resulted in a remarkable saving. The quality of cutting was in no way impaired and the amount of material rejected due to carelessness was reduced materially.

Considerable discussion has occurred, especially among the users of steel plate, as to the effect of gas cutting on the material cut. When observed microscopically, the cut edge is found to be altered materially as compared with the original metal. Apparently this is a physical change, as the pearlitic steel has been transformed into an unstable condition, taking one of three forms—sorbitic, troostitic, or martensitic—according to the amount of carbon present in the steel and the speed with which the metal is cooled. This physical change is due to the metal adjacent to the cut being heated considerably above its critical range and being cooled quickly through this range. The drop in temperature is caused by heat conductivity of the cold surrounding metal, by radiation losses, and by the fact that the heat is applied only momentarily at any one point, the machine being in constant motion while cutting.

Another interesting change is the tremendous grain growth which occurs on the gas-cut edge, the grain size gradually tapering back to the normal in the original metal. Ordinarily, grain growth is caused by holding a piece of steel at an elevated temperature for a prolonged period of time, both temperature and time being functions of its progress. The development of the grains in this case is due principally to the intensity of the heat, as the time element is short.

The change in this altered area has been considered previously as merely a physical one without any chemical alteration, but it has been discovered that the carbon content is increased on the burned edges. When the specimen is annealed, however, this carbon difference is equalized. Carbon analyses were made from four subsequent layers, each 1/32-inch thick, planed from the gas-cut edges of various plates. Analysis 1 represents the outside layer, analysis 2 the second layer, etc. The following table shows carbon analyses of the burned edges of four different plates, before annealing:

	Carbon, per cent —Analysis No.—			
Plate	1	2	3	4
A	0.32	0.17	0.17	0.10
B	0.27	0.27	0.23	0.22
C	0.16	0.12	0.09	0.10
D	0.12	0.12	0.11	0.10

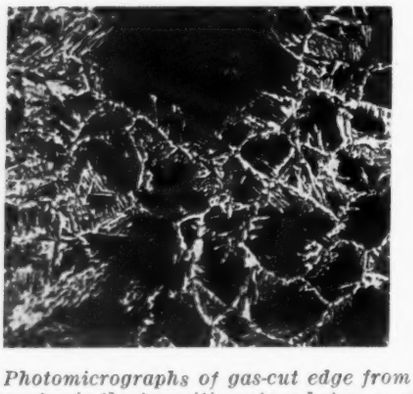
The same specimens were annealed and further carbon determinations made, with the following results:

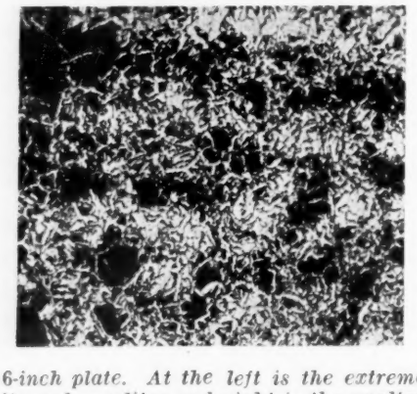
	Carbon, per cent —Analysis No.—			
Plate	1	2	3	4
A	0.19	0.19	0.18	0.17
B	0.21	0.23	0.22	0.23
C	0.08	0.08	0.10	0.11
D	0.10	0.11	0.10	0.10

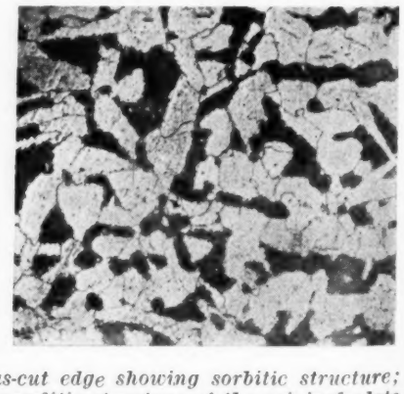
The next step was to try to find the cause of this carbon increase, the three possibilities being: (1) Absorption of carbon from acetylene; (2) pearlite and sorbite might give different carbon results under the same method of analysis; and (3) an actual local change due to the physical alteration.

Carbon analyses were taken from several samples, some of which were cut with acetylene, and some of which were cut with hydrogen, the

CUTTING of heavy steel plate mechanically with the oxy-acetylene torch is an art which is developing rapidly due to the speed and economy with which the work can be performed. Gas cutting, however, does have a material effect upon the edges of the steel being cut. The accompanying article describes this effect and suggests corrective procedure. The author L. M. Curtiss, is superintendent of the 140-inch and 206-inch rolling mills, Lukens Steel Co., Coatesville, Pa., and presented this discussion before the thirty-second annual convention of the International Acetylene association in Chicago last week.







Photomicrographs of gas-cut edge from a 6-inch plate. At the left is the extreme gas-cut edge showing sorbitic structure; center is the transition stage between sorbite and pearlite; and right is the unaltered pearlitic structure of the original plate

idea being to compare the effect of the two fuels and to eliminate, if possible, the possibility of any carbon absorption by the acetylene. The shavings were taken as previously described, each one representing 1/32-inch in thickness.

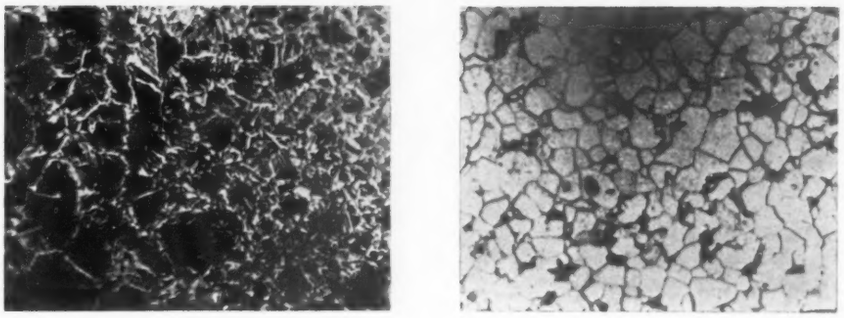
Cutting gas	Carbon, per cent — Analysis No. 1	2	3	4
Plate E				
Acetylene	0.18	0.18	0.17	0.17
Hydrogen	0.21	0.19	0.16	0.16
Plate G				
Acetylene	0.20	0.16	0.16	0.15
Hydrogen	0.22	0.18	0.15	0.15
Plate J				
Acetylene	0.28	0.26	0.24	0.24
Hydrogen	0.31	0.26	0.24	0.23

The results indicate that any increase in carbon on the outside cut edge cannot be attributed to the carbon in the acetylene as the hydrogen may give similar results.

The No. 1 analysis shavings were annealed in order to re-establish the pearlitic condition, and then were analyzed for carbon. These checked identically with the original No. 1 samples. This, of course, eliminated the possibility of obtaining a difference in carbon from sorbite and pearlite under the same method of analysis.

Carbon Migrates to Edge

The one remaining explanation for the increase in carbon of the outside gas-cut edge is that the pearlitic patches in the original steel were absorbed while passing through the transformation range, forming what is known as austenite, or a solid solution. When the cooling action starts, the ferrite is thrown out of the solid solution first, thereby making the remaining solution higher in carbon. In view of the fact that the hottest part of the metal is next to the kerf, the carbon migrates toward this hotter zone, where finally it is concentrated. Sorbite is formed because the metal is cooled so quickly that the pearlite does not have a chance to re-establish itself. This is checked by the fact that whenever a gas-cut piece is normalized or annealed the area of increased carbon and altered physical structure disappears completely and the steel returns to its original state.



Photomicrograph (left) showing the gas-cut edge with hard sorbitic structure. The same edge (right) with pearlitic structure after annealing

These physical and chemical changes in the steel leave a thin hardened zone on the outside edge, the penetration of which is usually superficial. With ordinary steels of 0.30 per cent carbon and under, no particular difficulty is experienced in bending or fabricating as the sorbitic hardening is not intense. With high carbon and alloy steels, the precautions of annealing or machining should be used to remove the hardened edge.In the low carbon steels, however, some exceptions should be recognized.

Where a bend occurs with the gas-cut edge on the outside surface, or in a machine part where stresses are concentrated at one point and the member is subjected to the fatigue of intermittent tensile stresses, all traces of gas cutting should be removed by annealing, planing or grinding. It is extremely necessary to remove any nicks or notches, as they are particularly susceptible to the effect of intermittent stresses and form an excellent opportunity for the development of incipient cracks, which in turn may develop a large fracture.

The depth of penetration of the altered zone has been found to have a definite relation to the thickness of the material cut. This relationship is shown graphically in the chart below.

If the simple precaution is taken of preheating the steel before gas cutting, the cooling effect will be retarded and this will prevent, to some extent, the formation of sorbite and reduce the hardness. High carbon and alloy steels, such as chrome-vanadium, that are particularly susceptible to temperature changes, should always be preheated, and should be annealed immediately after cutting to re-establish the pearlitic condition and remove cooling strains.

Hot Cutting Saves Oxygen

Hot cutting not only is beneficial to the steel, but also is economical in the use of oxygen. Any steel is oxidized more easily at elevated temperatures than at atmospheric temperature. Special care must be exercised, however, on particularly thick sections, where the interior is considerably hotter than the exterior. The oxygen may start its penetration without much difficulty, but upon entering the interior of the section may fail to go through and will cause a flare up in the cutting. This stoppage is caused by the hot center, which oxidizes so readily that a cavity is formed on the inside of the piece and the flame, once being diverted, is not easily adjusted. The operator at this point usually makes the wrong move by increasing the pressure, which intensifies the trouble and increases the size of the cavity to such an extent that the slab may be ruined.

Some differences of opinion exist as to the proper temperature of the steel for the most efficient use of oxygen to obtain the correct pene-

(*Concluded on Page 38*)

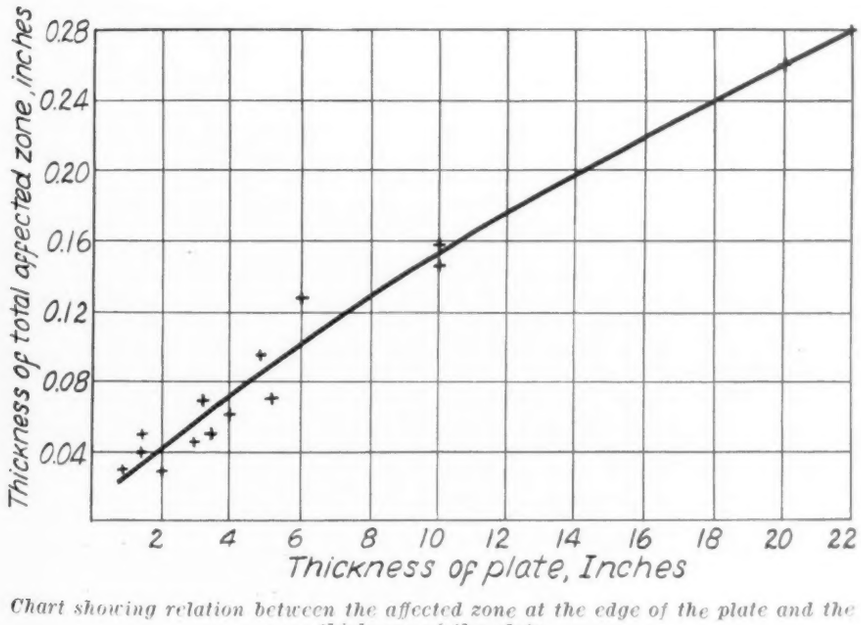


Chart showing relation between the affected zone at the edge of the plate and the thickness of the plate

New Cemented Carbide Cuts Steel at Higher Speeds

REMARKABLE increases in the cutting speeds of steel are said to be possible with the new cemented carbide material developed by Fried. Krupp A. G., Essen, Germany, and introduced in this country by Thomas Prosser & Son, 15 Gold street, New York. As announced in the Nov. 9 issue of STEEL, page 33, the metal is similar to tungsten carbide, but does not replace it. It is offered as a supplementary tool material.

In developing the material, designated Widia X, the Krupp works conducted an extensive series of tests to determine its operating characteristics and some of the results, revealed by the Prosser company, are of interest. A few examples are as follows:

A chrome-nickel steel corresponding to S. A. E. 3335 was run at a speed of 197 feet per minute, a feed of 0.060-inch and 0.40-inch depth of cut. After 5 minutes use, the tool was removed from the lathe; when examined under a microscope, no wear or cratering were discernible. A cemented tungsten carbide tool under the same speed, feed and cut, showed appreciable cratering after 1¾ minutes use. The color of the chip made by the new tool indicated that much less heat was generated, and the chip came off the steel without tearing action, indicating a finer finish.

Speeds Are Increased

In facing both ends of a machine steel bushing for a motion picture projector—material highly ductile and difficult to cut—the new tools run at 1250 revolutions per minute, as against 280 revolutions of high-speed steel. With high-speed steel the time per piece was 1 minute and with the new tools the time is 16 seconds. The new tools have cut 4700 pieces without grinding, against 200 per grind with high-speed steel, and are being set for another job without grinding. The piece was held to a limit of 0.004 inch; straight cutting oil was used.

In turning S. A. E. 1315 steel at 359 feet per minute, the capacity of the lathe, the new tool ran 15 hours before regrinding, another hard alloy tool required grinding every 6 hours.

On a very old lathe, the new tool cut 1800 pieces of steel measuring 1⅞-inch diameter and 1 5/16 inches long before grinding. Regrinding required the removal of only 0.010 inch of the carbide. The depth of cut was 0.055 inch.

A test in milling S. A. E. 1020 steel 18 inches long and 3½ inches high showed long life between grinds. In a series of successive cuts, starting at 150 feet per minute, 9-inch table feed and 1/16-inch depth of cut and ending at 387 feet per minute, 42-inch table feed and 1/16-inch depth of cut, the new tool made 20 more cuts at the highest speed than the other hard alloy steel tools tested.

Composition of the new material is not yet available, but it has been learned that it is a unique mixture, embodying a rare metal carbide not previously used. It is manufactured by coating the cutting particles with a softer material which acts as a binder, thorough mixing to obtain a homogeneous and uniform mass, pressing together under enormous hydraulic pressure in a mold, and finally sintering at high temperature in an inert atmosphere in an electric furnace. the cementing process is similar to that employed in the manufacture of tungsten carbide and produces a uniform product free from blowholes or other defects.

Brazed to Shanks

Copper brazing to shanks can be done by the same methods as are employed for tungsten carbide; however, complete tools made by the Prosser company embody special high-grade steel and the tips are brazed by a special process to overcome difficulties previously encountered with tipped tools. Applications of the new material to lathe-type tools and milling cutters are understood to be the same as for tungsten carbide; tool angles and forms of the tips also remaining the same.

Grinding of the new metal is said to be as simple as the grinding of tungsten carbide, the same wheels and methods being employed. In some cases it is necessary to grind chip breakers in the tools; care must be taken not to hollow grind the chip breaker, but rather to grind it parallel to the top surface of the tool with a small radius at the back to form the chip.

As previously pointed out, one feature of the material is the almost complete elimination of cratering action or the cupping out of the top of the tool caused by the pressure and abrasion of the chip coming off the work. Chips seem to slide off the surface of the material with ease and are cut clean with no tearing action, less friction resulting. The work is said to remain cooler and a better finish is produced.

Essentially a high-speed material, the new product is claimed to give best results when the cutting speed can be at least doubled, using reasonably light feeds. In case of accident, such as suddenly stopping the machine with the tool in the cut and the feed on, or where the tools are tested to destruction and breakage occurs, usually only a small amount of grinding is necessary to put the tool in good condition. Some of the other carbide cutting materials shatter and are completely destroyed under these conditions.

According to the Prosser company, existing equipment can be utilized with the new tools, provided the machine can be speeded up to take care of the greatly increased cutting speeds.

Foundry Convention To Be Held in Philadelphia

The thirty-sixth annual convention and exhibition of the American Foundrymen's association will be held in Philadelphia, May 2-6, 1932, according to an announcement just made by the association.

All convention and exhibit activities will be centered in the new Municipal convention hall which will provide adequate facilities for both meetings and show so that all activities will be centered under one roof. Two halls are available for exhibit purposes, both having complete power facilities, including alternating and direct current, gas, compressed air, hot and cold water and live steam. The hall also provides restaurant facilities.

Minneapolis Group Plans Welding Conference

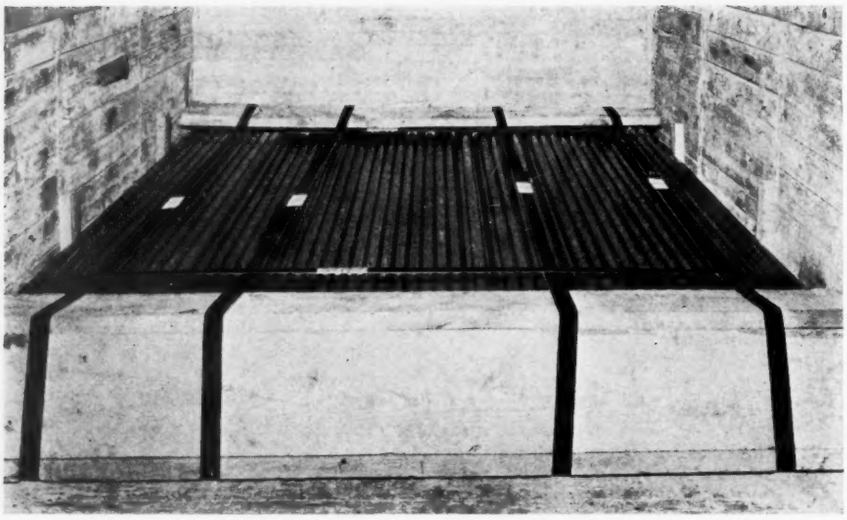
A conference on welding methods is being arranged by the Northwest chapter of the American Society for Steel Treating and the Manufacturers' Association of Minneapolis, to be held Nov. 19-21 at the plant of the Caterpillar Tractor Co., 2601 University avenue, Minneapolis. Nine papers will be read during the three days, covering such subjects as weld testing, hard surfacing, automatic welding, shop welding of machinery, a new method of pipe welding, shielded arc welding, bronze welding and cutting, recent developments in the welding industry, and a new code for welded pressure vessels.

Supplementing the technical discussions will be demonstrations of both gas and electric welding, showing modern methods and appliances in operation. An additional feature of the conference will be a question box, where visitors may write out questions on any phase of welding about which they wish information. The questions will be answered at the close of the morning sessions.

The Illinois Steel Company is now rolling CB sections on its new Wide Flange Beam Mill at the South Chicago, Illinois, plant. The vertical rolls of this mill are equipped with Timken Heavy Duty Mill Type Bearings.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**



Combination of wood blocking and steel unit load bands used as bracing in the shipment of a load of corrugated sheets

Use of Steel Tie Strips Cuts Cost of Freight Shipping

ACME STEEL CO., Chicago, has developed, on a large scale, the use of its unit load method of carload freight handling not only for its own products but for freight shipping in general. The unit load method employs tempered, heavy flat steel bands, which are tensioned around bundles, heavy units, packages, boxes, etc.

Shipping units of great mass and weight thus are created, and may be unloaded from cars with latest material handling equipment. Unusual economies are claimed in the receiving and shipping departments of industrial companies and manufacturers shipping on a large scale because of the elimination of time in unloading and the use of other more costly forms of bracing. All types of products are being shipped by use of the unit load method. These include steel pressure tanks, steel drums, tubular goods, automobile frames, steel strip, coil stock, coils and flats, sheets, bars, gas cylinders, tile and various building products, automobile motors and parts, railroad supplies in kegs and boxes, and many other commodities. Accompanying illustrations show some of the applications possible.

A number of the railroads are using this method at loading docks and transfer stations. Tests were conducted by several railroad officials on a car of oil drums bound with unit load bands. Although the car was subjected to extremely rough handling and the abuse was much more severe than ordinarily is encountered in switching operations or en route, little shifting occurred and no damage. Results were charted, which showed that only about 50 per cent of the shocks sustained by the car were transmitted to the load. The weight of the unit load band to brace a car of steel sheets from the Pittsburgh district to Detroit amounts to less than 100 pounds, with a cost in freight for ten cars of $2.90, or a saving of $26.10 a day on ten cars in freight on dunnage, it was found by one manufacturer in that territory formerly using wood blocking as a bracing method.

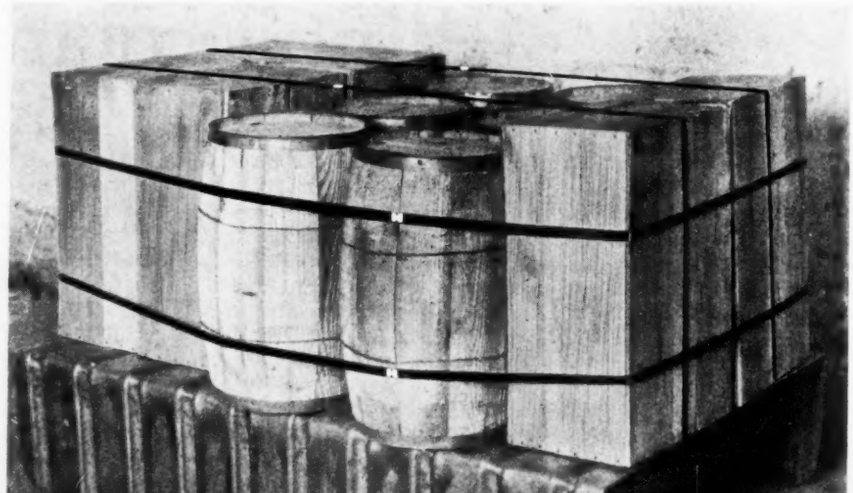
An automobile manufacturer has his chassis frames shipped, strapped in gondolas, instead of stacked loose in box cars as formerly. This same company now has all its steel shipped to the plant strapped in bundles, wrapped in heavy paper for such protection as needed, and loaded in gondolas. Strip steel comes in bundles up to 30 inches in thickness; sheet and bar steel comes in "lifts" of about 1500 pounds for convenient handling with an electric crane. Unloading such a car now is the work of less than an hour, as compared with former practices when a day was consumed in unloading by several men.

Special Steel Developed

Unit load band is made from special analysis steel billets of chemical and physical properties developed for this particular use. Requirements of high tensile strength and sufficient elasticity to withstand severe impact shocks of railroad switching were determined by laboratory and field research, extending over a number of years. In the field work, many carloads were braced with different types of unit load band and then tested in the switching yards by subjecting them to shocks at various speeds.

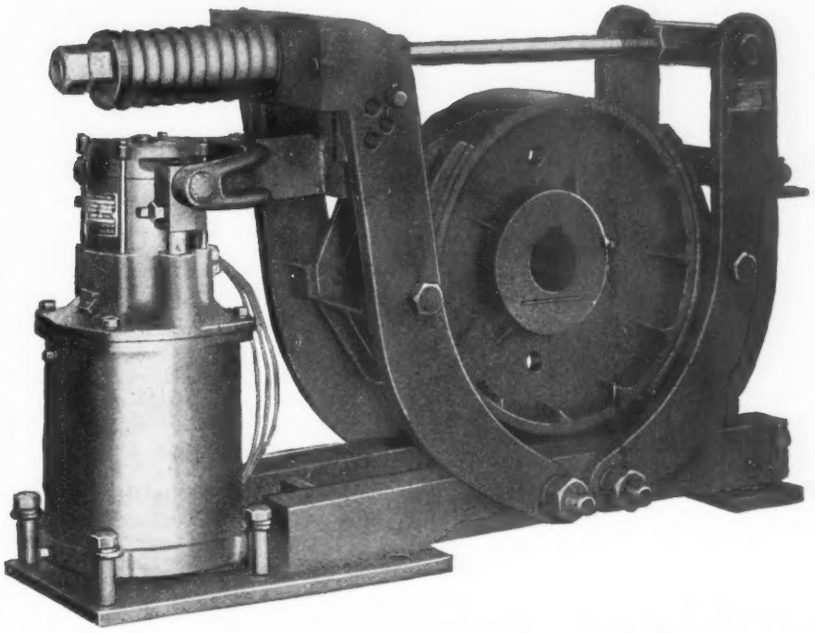
It is claimed that contents as valuable as $25,000 in a single car are braced with unit load band. The band is made in various sizes, including ¾-inch, with an ultimate strength of 2475 pounds; 1¼-inch, with strength of 4298 pounds; 1¼-inch, heavy, with strength of 5076 pounds; and 2-inch, with ultimate strength of 7200 pounds. The band is furnished in ribbon-wound coils in weights of 45 to 265 pounds.

Unit load stays are furnished to



Mixed shipment of freight on skid, bound with unit load bands

SUPER-SMOOTH BRAKING PERFORMANCE



The new G-E Type CR9516 alternating-current thrustor-operated brake — representative of a complete line for every industrial need where smoothness is vital

WITH THE NEW G-E THRUSTOR BRAKE

Distinctive Features

1. A smooth, cushion-like setting, attainable only through the G-E thrustor—a unique motor-operated device for producing straight-line motion—with its inherent dashpot action.
2. Positive action. Brake released with uniform effectiveness, regardless of shoe wear or adjustment, within 125 per cent of rated torque.
3. No burnouts, regardless of any adjustment possible on the brake, as no possible adjustment can overload the thrustor motor.
4. Greatly reduced operating current compared with solenoids.
5. Time-delay setting up to 20 seconds, optional.
6. Inching within a fraction of an inch without jar.

Control specialists in your nearest G-E office have complete information on these new brakes; ask them to give you further facts.

301-86

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Automobile frames tied into unit loads by steel bands. The units are lifted from the car by crane

hold the bands in position along car walls, and seals, made of cold-rolled steel, electrogalvanized, are supplied for use with ¾-inch, 1¼-inch, and 2-inch band, to meet requirements for specific applications.

Unit load tools, made of malleable iron castings and tool steels, cadmium plated, precision-machined and hand-tooled, consist of a stretcher made to handle ¾-inch, 1¼-inch and 2-inch band, a sealer made in three types, a special sealer for 2-inch band, snips for cutting ¾-inch, 1¼-inch and 2-inch band, a hand truck equipped with two reels for band and compartments for tools, seals, etc.; and a reel and shear.

Careful Market Study Essential in Preparation for New Prosperity

CHANGING business conditions, brought on by the present industrial depression, are disclosing to many companies that their territory divisions, division of customers among salesmen, sales expenses, or even their customers themselves, are no longer what they were in the past. In looking forward to the period of expansion that inevitably will follow the present depression, these companies are forced to realize that entirely new sales and marketing setups will be required, and at present these organizations are making plans for the requisite changes, according to F. B. Heitkamp, general sales manager, Cincinnati Milling Machine Co., Cincinnati, speaking before the industrial marketing division of the American Management association in Cleveland, Nov. 11.

Market May Be Saturated

Mr. Heitkamp declared it a popular fallacy to believe that a market that has produced excellent sales in the past is capable of producing similar sales in the future, citing the instance of one manufacturer who saved much expense and effort by a study which revealed that he had already saturated his market.

However, the speaker warned that unless market research is undertaken with the object clearly in view, unless it is intelligently supervised and unless it is carried out accurately, it may occasion a waste of time, and expense, and lead to faulty conclusions. Probably the greatest opportunities for research lie in the direction of fitting the product to the needs of the consumer, it was stated.

Need Sales Engineers

The problem of engineering service in industrial selling is one which often is met by using two salesmen, one a contact man and the other an engineer. An advantage over this method is to develop representatives who would be trained primarily for sales functions, but possessing enough technical education or experience to enable them to handle a technical discussion intelligently. The latter method was advocated by Raymond S. Perry, vice president, Ingersoll Milling Machine Co., Rockford, Ill., advantages being chiefly in the fact that the salesman must recognize and define the requirements for a sale without having to contribute highly specialized engineering knowledge.

A salesman of this type would be trained carefully to recognize an opportunity for the application of his products in a customer's shop. His task then would lie in drawing a thorough word picture of the customer's problem and presenting this picture to his central engineering staff without obligating it to any preconceived solution.

Instalment selling, industrial market analysis, factory equipment modernization, personnel management in the foreign field and sales price policies were other subjects covered in the conference which continued through Friday, Nov. 13.

Yearbook Outlines Work of Standards Association

American Standards association, 29 West Thirty-ninth street, New York, is distributing copies of the *American Standards Yearbook* for 1931. The 102-page booklet contains complete listing, together with sponsors and co-operating organizations, of the 181 approved American standards and 179 incompleted projects.

Discussion also is presented of how standards are developed and the course they follow in being approved; how the association maintains co-operative relations with the federal government, international standard bodies and local representatives; how the association's affairs are conducted; and other miscellaneous information about the standardization movement.

Machine Gas-Cutting of Heavy Steel Plate

(*Concluded from Page 33*)

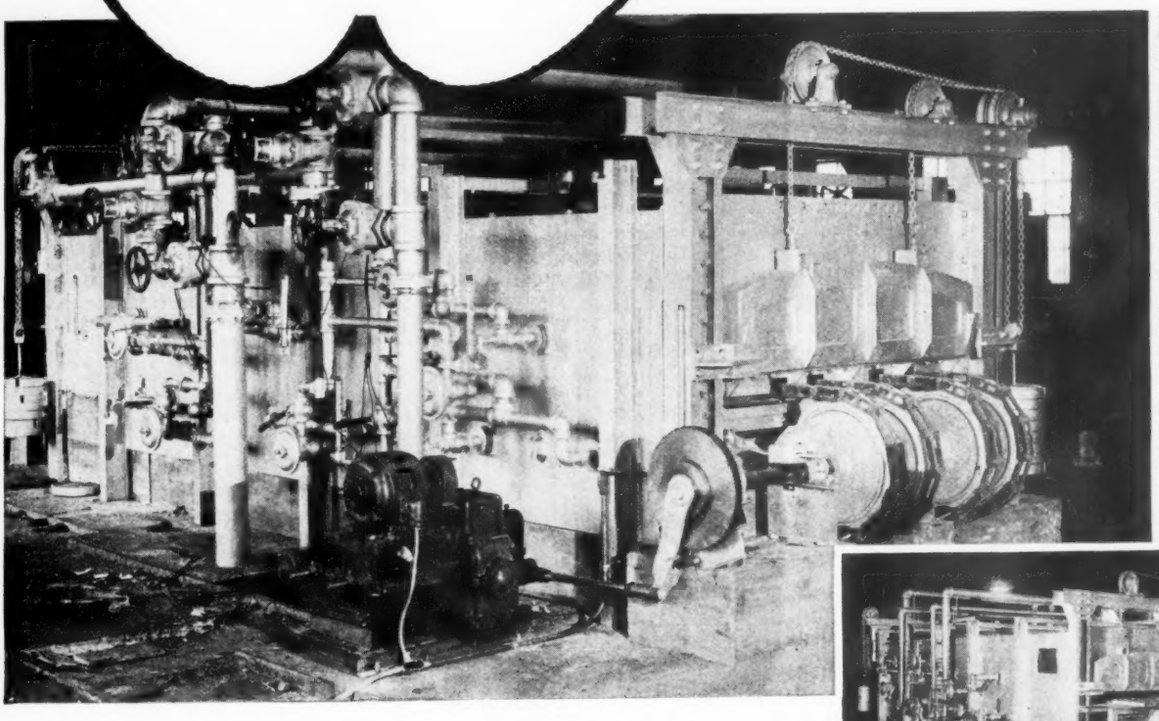
tration, and to leave the steel in the best shape metallurgically. For all practical purposes 500 to 600 degrees Fahr. should give the best result.

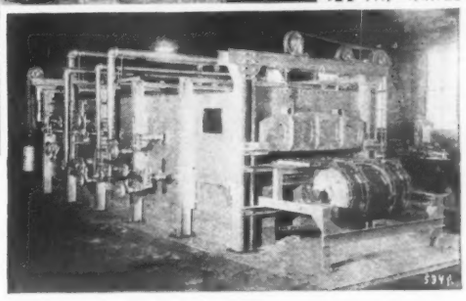
A real problem is presented in making clean, economical cuts in steel slabs between 20 and 30 inches thick. A generous supply of fuel is needed to support the preheating flame. High oxygen pressure is required to penetrate the entire thickness, so that the molten oxide may be blown out of the kerf. If excess pressure is used, a large amount of oxygen passes straight through the cut without having any oxidizing action upon the metal, and consequently is wasted. In order to compensate for this loss, the pressure may be reduced and the volume increased by the use of more than one regulator, and in some cases by using special equipment, such as a three-hose torch with large openings and fitted with an extra large hose. An illustration on page 31 shows a gas-cut slab 22 inches thick, which presents a remarkably clean surface. Cuts of this thickness are not unusual and a 28-inch gage has been cut with excellent results.

Hardening PLOWSHARES

EFFICIENTLY AND ECONOMICALLY *with a Modern* SC CONTINUOUS FURNACE..

THIS CONTINUOUS chain conveyor furnace hardens 129 plowshares an hour for the Cockshutt Plow Company, Ltd., Brantford, Ontario, Canada. It is giving very satisfactory service . . . typical of the thousands of Surface Combustion furnaces successfully performing throughout the metal working industry. The Cockshutt hardening furnace is fired with SC low pressure, single stage proportioning burners operating on 1050 B.t.u. natural gas . . . gas consumption is approximately 1829 cu. ft. per hour . . . shares leave the furnace at 1600° F. after a heating cycle of 35 minutes . . . average production 2300 lbs. of gross work per hour.





OPERATED BY HENRY L. DOHERTY & COMPANY

Surface Combustion

SURFACE COMBUSTION CORPORATION
TOLEDO, OHIO.

SALES AND ENGINEERING SERVICE
IN PRINCIPAL CITIES

Metals in Powdered Form Are Pressed And Sintered Into Various Shapes

THE recently developed "powdered metallurgy" is showing particular promise for the manufacture of pressed metal parts in which resistance to corrosion is required and in which the self-lubricating capacity of these parts is a benefit.

According to Charles Hardy, New York, who has been in the forefront in this development, practically all metals can now be obtained in the powdered form. The following metals already are available: Tin, copper, zinc, nickel, iron, steel and alloy steels, including corrosion and heat-resistant steels; silver, chromium, cobalt, gold, platinum, tungsten, monel metal and palladium.

Fineness Varies

These powdered metals, says Mr. Hardy, may be used singly or they may be mixed in desired ratios, and they are pressed into shape without losses by oxidation or as scrap. The density of parts formed from powdered metals may be varied by using pressures ranging from 6 to 125 tons per square inch. An even grain may be obtained through a perfected method of mesh control which allows delivery of the metal in powders of 200, 300 and 500 mesh and, in the case of silver, 1000 mesh. After being pressed into shape, the powdered metal is sintered at a temperature considerably below the melting point, this sintering being productive of a welding effect. Chrome-nickel steel alloys are sintered at 1000 degrees Cent.

Powdered metals, it is understood, have been applied with marked success to the production of bearing metals. The voids between the grains are capable of absorbing an amount of oil equivalent to 4 to 6 per cent of the weight of the metal. Experience is said to show that automobile bearings pressed from powdered copper and tin are sufficiently porous to contain enough lubrication to allow for 20,000,000 revolutions without becoming dry.

Other parts which Mr. Hardy states are being made from powdered metals include valve tappets, resistance bars, welding rods, electrical contact points, high-speed machine tool bits, parts for railroad electric signal controls, recompressed rings, etc., for electrical equipment.

The use of powdered metals for coating other metals also is developing a wide field of application. When powdered metals are used in large enough quantities, the cost is reduced to an economical basis, it is said.

Prominent Speakers at Alloys Conference

Announcement has been made of the program for the conference on metals and alloys, sponsored jointly by Case School of Applied Science, Cleveland, and the Cleveland Engineering society, and to be held in buildings of the former, Nov. 18-20. Registration will be at the Bingham Mechanical Engineering building. In connection with the conference there will be demonstrations of welding of aluminum, nickel, stellite and corrosion-resisting steel, as well as exhibits of monel metal, nickel, nitralloy, aluminum, magnesium, corrosion-resisting steel and stellite products. Technical papers included in the program are as follows:

Wednesday, Nov. 18

MORNING

"Educating Engineers," by W. E. Wickenden, president, Case School of Applied Science.
"Metallurgy of Alloying," by A. A. Bates, assistant professor, Case School of Applied Science.
"Stainless Steels," by M. J. R. Morris, Central Alloy division, Republic Steel Corp., Massillon, O.

AFTERNOON

"Monel Metal and Nickel Alloys," by T. H. Wickenden, International Nickel Co., New York.
"Brass, Bronze and Copper Alloys," by W. R. Hibbard, American Brass Co., Waterbury, Conn.
"Magnesium Alloys," by L. B. Grant, Dow Chemical Co., Midland, Mich.

EVENING

"Romances of Metals and Alloys," by Zay Jeffries, consulting metallurgical engineer, Cleveland.

Thursday, Nov. 19

MORNING

"Nitrided Steels," by H. A. deFries, Associated Alloy Steel Co., Cleveland.
"Ferrous Alloys," by W. P. Sykes, Cleveland Wire division, General Electric Co., Cleveland.
"Zinc and Its Alloys," by W. M. Peirce, New Jersey Zinc Co., Palmerton, Pa.
"Aluminum and Its Alloys," by L. W. Kempf, Aluminum Co. of America, Cleveland.

AFTERNOON

"Review of Chicago Symposium on Properties of Metals at High Temperatures," by H. J. French, International Nickel Co., New York.
"Use of Metals at High Temperatures," by H. A. deFries, Associated Alloy Steel Co., Cleveland.
"Alloys in Modern Buildings," by G. Maguolo, Cross & Cross, architects, New York.
"Architectural Metals," by I. R. Disbrow, W. S. Tyler Co., Cleveland.

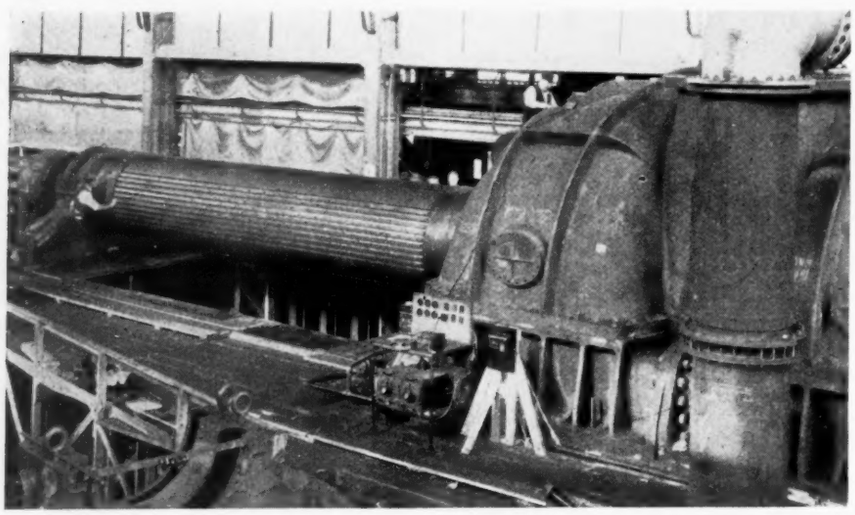
Friday, Nov. 20

MORNING

"Alloys in Machine Tools," by D. M. Gurney, Warner & Swasey Co., Cleveland.
"Properties of Alloys Under Dynamic Stress," by G. S. von Heydekampf, Baldwin-Southwark Co., Philadelphia.
"Bearing Metals," by C. H. Bierbaum, Lumen Bearing Co., Buffalo.

AFTERNOON

"Alloys in Aircraft Engines," by R. R. Moore, consulting metallurgist.
"Light Alloys in Aircraft," by H. W. Gillett, Battelle Memorial institute, Columbus, O.

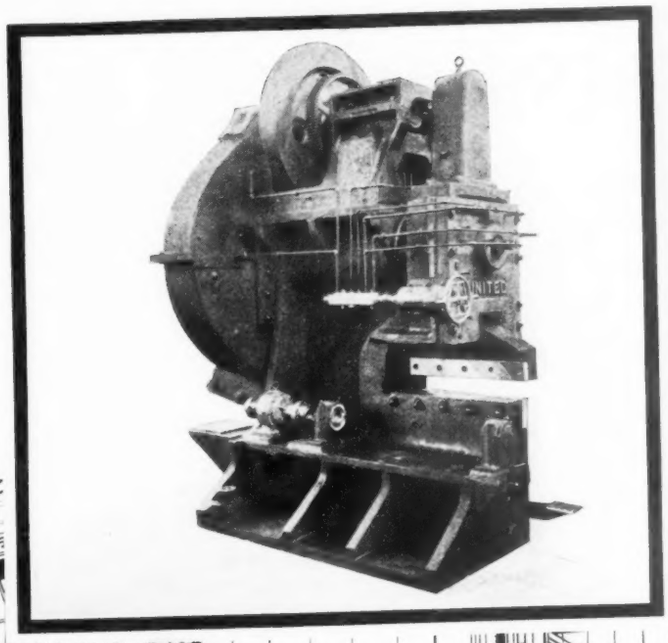


Testing the wound revolving field of one of the two 160,000-kilowatt turbine-generators for the Brooklyn Edison Co. in the Schenectady plant of the General Electric Co. This is said to be the largest 1800-revolution-per-minute revolving field ever built both as to size and capacity. As shown, it is coupled to a steam turbine for dynamic balancing

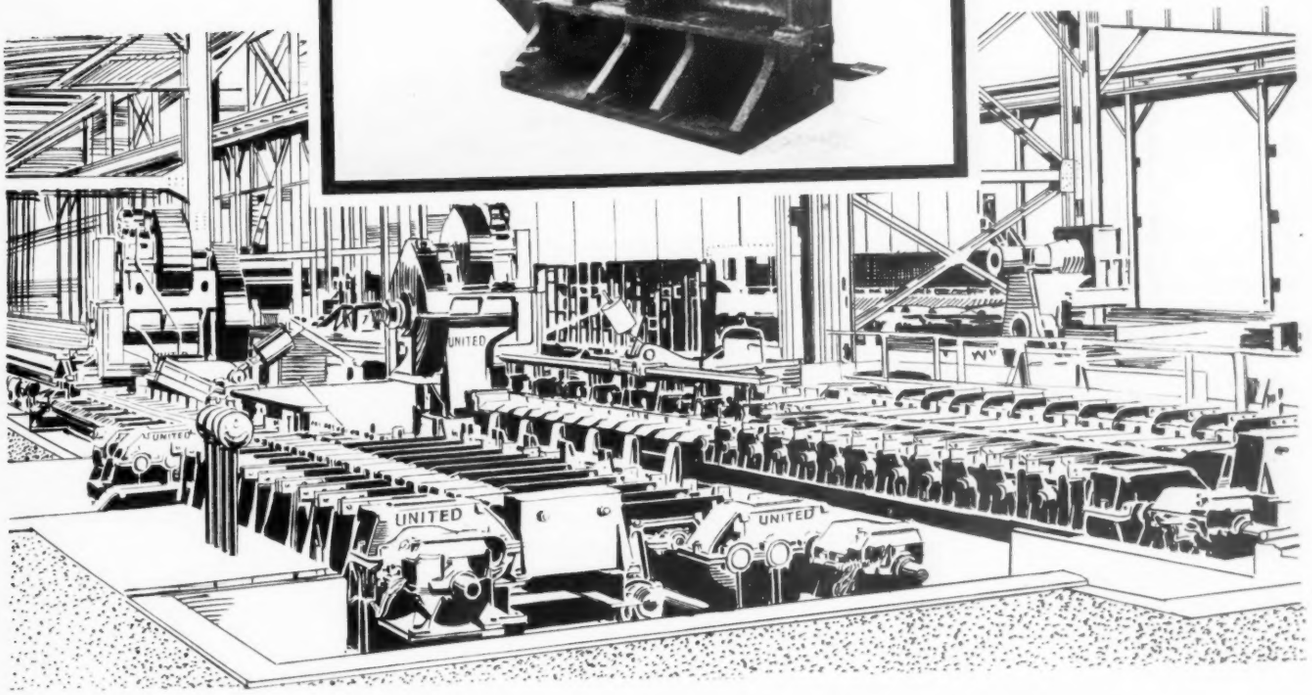
The recent celebration of the drilling of the first producing oil well in the world, just 70 years ago, calls to mind the progress this industry has made in a relatively short period. In 1859, only two oils wells were drilled; by 1929, the total number was more than 800,000. Up to 1929 these wells had yielded 18,638,505,000 barrels of oil.

SHEARS *for*

ROUNDS, SQUARES, FLATS AND STRUCTURAL SHAPES



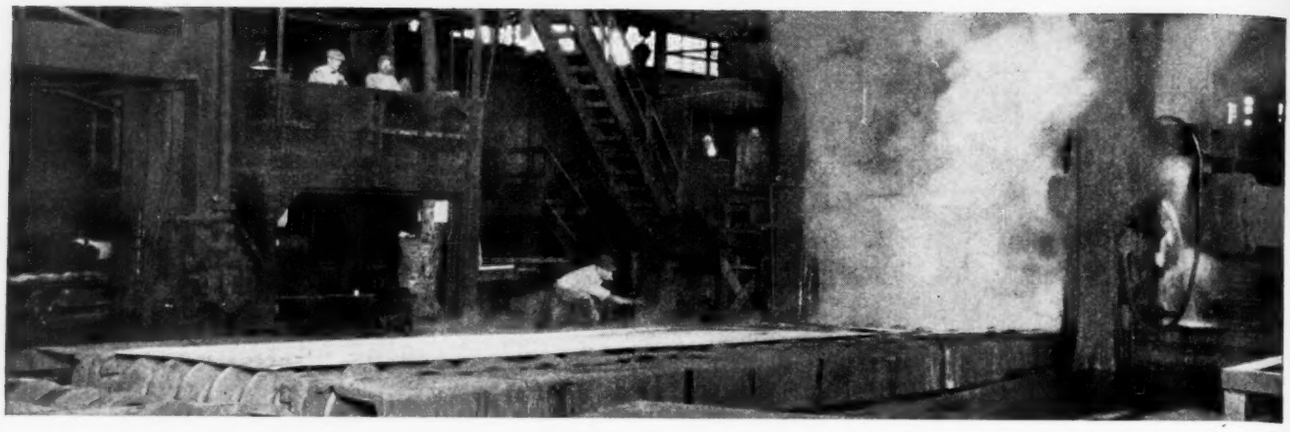
No. 3 VERTICAL SHEAR
Cap. 2″ Square Cold Soft Steel



UNITED

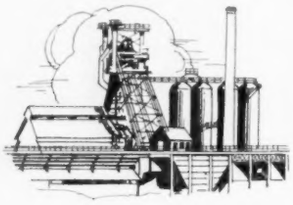
ENGINEERING *and* FOUNDRY COMPANY
PITTSBURGH --- PENNSYLVANIA

ROLLS AND ROLLING MILL EQUIPMENT



PROGRESS IN STEELMAKING

A PRODUCER of chromium-manganese steel finds the most satisfactory pickling solution for this grade of steel contains from 1 to 2 per cent hydrofluoric and from 5 to 10 per cent nitric acid used at a temperature between 122 and 158 degrees Fahr. No brightening dip is necessary after pickling in this solution.



A DUST catcher on a stack in the Pittsburgh district is equipped with a device which prevents clouds of dust being blown over the furnace yard when the contents of the container are dumped into hopper cars. The unit is built with a screw feed and a rotating cage equipped with a series of bars which agitate the dust and mix it with water. The sensible heat is destroyed as the dust issues from the dust catcher and considerable labor formerly involved in cleaning-up the dust around the cast house, the loading track and blast furnace yard has been eliminated.

♦ ♦ ♦

At an electric welded pipe mill in this country the difficulty experienced in heating the plates in sufficient quantity and at the correct temperature to keep the mill engaged, was overcome by the installation of a preheater which supplies air for combustion at 1000 degrees Fahr.

♦ ♦ ♦

Photoelectric tubes now have become a useful aid in materials handling where they are used to govern the selective dispatching of products. Tote pans, which are to be given precedence, are provided with tabs when they are placed on the conveyor. At a transfer point, photoelectric tubes, actuated by these tabs, set in operation machinery which places the tote pans on the conveyor leading to the desired receiving station.

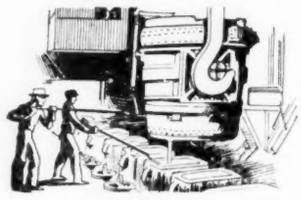
♦ ♦ ♦

Scheduling the flow of brick from the storage shed to furnaces to be relined is accomplished at one plant with a reduction of idle furnace time. The brick is loaded at the storage shed in steel boxes with a holding capacity of about 2000 9-inch equivalents. Shapes required on the first part of the job are designated on the container as No. 1, delivered to the cast-house floor and placed as near to the job as possible. Brick for other courses are labeled Nos. 2, 3, 4, etc., depending upon the order in which they are to be laid. When empty, the boxes are returned to the brick shed for additional loading. By this arrangement the company uses a minimum of labor at the storage shed and a minimum number of helpers necessary to keep the masons supplied with brick.

♦ ♦ ♦

To prevent cutting ingot molds with curved bottoms by the stream during the pouring operation, one company is applying a chrome coating to the core bottoms which is retained by the mold.

DRYING stopper rods for open-hearth ladles in a cheaply built drying compartment fired with blast furnace gas has decreased the number of running stoppers at the pouring station of one large steelworks considerably. When oil was used for this purpose about one running stopper out of every six or seven heats was encountered; since the use of blast furnace gas was inaugurated, however, only 0.02 per cent of all heats teemed over a 2-year period were poured with a running stopper.



TROUBLE with pipe in rail steel ingots has been overcome by an open-hearth steel producer by prolonging the regular pouring time about 5 minutes and taking about 15 to 20 seconds to teem the last foot of each ingot.

♦ ♦ ♦

Considerable labor in handling sheets to and from cold mills is saved by a producer in the Pittsburgh district by a system of gravity roll conveyors installed on each side of the roll stands. Packs weighing up to 8 tons are piled on skids made of 4-inch steel channels with 3 x 3-inch wooden inserts which prevent marring the surface of the stock. Four skid loads are stored on the conveyor in front of the mill to free the crane for other departmental service. When the sheets are to be fed through the cold rolls a pile is moved over the conveyor until it is parallel with the feeding table. The sheets then are fed singly through the mill and are ejected on a roller conveyor which slopes downward at a 1.4 per cent grade and delivers the sheets to the end stop.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Hardfaced Dies

Advantages of hardfaced dies and methods of making them, in American Machinist, Nov. 5, 1931, p. 724, 1 pp., 4 illusts.

Two methods are used commonly for producing hard wearing faces or surfaces on blanking dies: Welding on of a hard material such as stellite; and plating with chromium. Resulting increases in die life in many cases run as high as 12 to 1; furthermore cleaner blanks are produced, blanking power is reduced and die costs are reduced appreciably. Nonferrous hardfacing material available as a welding rod usually is applied by the oxyacetylene process.

A large middle western forging plant uses hardfaced hot trimming die for trimming auto truck ring gear forgings. The die, 10 3/16 inches in diameter, is made of vanadium steel with the hardfacing alloy welded to the cutting edge. Its life has been found to be 21.5 times that of a plain steel die.

In the case of a difficult blanking die shape, ordinarily of short life, service life was tripled by hardfacing. Similar treatment lengthens the lives of hot punching, forming and trimming tools of a wide variety of shapes and often permits salvaging worn-out dies.

STEEL, 11-16-31

Furnace Atmospheres

Results of the investigation of the burning and overheating rates of heating and scaling of steel, discussed by D. W. Murphy and W. E. Jominy, in engineering research bulletin No. 21, University of Michigan, 150 pp., 63 illusts.

The conditions of furnace atmosphere and temperature were found to play an important part in the behavior of steel in forging furnaces. The burning temperature of steels, particularly those low in carbon, was observed to be about 100 degrees Fahr. lower in atmospheres produced by firing with excess air than in atmospheres produced by firing with excess fuel. Many of the steels investigated showed no overheating effects in the temperature range just below the burning point. Plain-carbon steels may be heated safely to temperatures just below the burning point which can be estimated from the iron-carbon diagram. Scaling of steel increases considerably with increasing temperature in the forging range and becomes extremely rapid above the melting point of the oxides, 2475 degrees Fahr., and above. Furthermore, the presence of free oxygen in a furnace atmosphere increases considerably the scaling losses over that obtained when excess fuel instead of excess air is used. Sulphur dioxide in small amounts in furnace gases was observed to double scaling losses and increase the sulphur content in the outer layers of the metal. The whole research points to the evident need for accurate control of atmosphere and temperature in forging furnaces through the use of a refined and low-sulphur fuel.

STEEL, 11-16-31

Steel Castings

High strength in steel castings, a discussion in Product Engineering, November, 1931, p. 503, 1 pp., 1 illust.

Trends in machinery and equipment design toward higher speeds, heavier loads and increasingly severe conditions have resulted in the development of a variety of steel castings to meet requirements for higher strength and greater wear resistance, as well as heat and corrosion resistance.

A draw bench tong head, for example, can be made of chrome-molybdenum steel with tensile strength of 120,000 to 150,000 pounds per square inch, a yield point of 85,000 to 110,000 pounds per square inch, an elongation in 2 inches of 12 to 18 per cent, and a reduction in area of 18 to 30 per cent. Cam castings of the same steel, developed principally to withstand wear and impact, are heat treated after machining to attain brinell hardness of about 450.

STEEL, 11-16-31

Rustless Steels

Riveted and welded structures of corrosion-resisting steel, by T. Holland Nelson, consulting metallurgist, in Iron Age, Oct. 22, 1931, p. 1054, 4 pp., 5 illusts.

Carbide precipitation or intergranular corrosion is a troublesome problem, whether due to welding or some other cause. In this article the author gives his views of the problem with particular reference to welding. He points out that there are many circumstances under which the welding of corrosion-resisting steels not only is possible, but thoroughly practical. The future use of higher chromium alloys is predicted.

With regard to the ever-present argument concerning riveted or welded structures the author mentions that it is interesting to note that in the United States the bulk of the equipment is of riveted design, whereas in Europe the bulk of the material made from 18-8 chrome-nickel steel is of welded design.

Many instances are to be found where welded structures of corrosion-resisting steel can be used safely and if due consideration is given to all phases of the problem at the outset, there should be no spirit of rivalry between advocates of riveted and of welded design.

STEEL, 11-16-31

Mottled Tin Plate

Causes of dull areas on tin plate and results of experiments on tinning and fluxes used, discussed by J. C. Jones, before the Iron and Steel institute (London), paper No. 11, 11 pp., 19 illusts.

Two methods exist by which tin plate free from visible mottle can be manufactured. Steels tested under identical conditions differ greatly in their behavior in the tinning pot. The reasons for these differences are connected with the depth and purity of the envelope of the bar. Large scale experiments with a number of fluxes have shown that comparatively small modifications in the tinning operation can change the product from mottled plates to sheets free from this defect.

The future prospects of a solution of the mottle problem at the tinning stage of production are promising and there are reasons to believe that a completely workable way out of the difficulty can be reached. The paper discusses the use of various fluxes including zinc chloride, ammonium chloride and aluminum chloride.

STEEL, 11-16-31

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Announces New Spiral Bevel Gear Generating Unit

Gleason Works, 1000 University avenue, Rochester, N. Y., recently developed a new spiral bevel gear planing generator. The frame of the machine is cast in one piece and is of heavy section as shown in the accompanying illustration. Cradle carrying the tool slide is mounted in a housing which is bolted directly to the base of the unit. If it is desired to cut hypoid gears on this machine a special work head can be supplied for correctly generating the pinion in the offset position in which it is to run.

After the machine is started, operation continues without interruption until the cut is finished, when it is stopped automatically. The setup for finish cutting is the same as for rough cutting, but different tools are used and each side of the tooth is finished separately. The feed movement is all on the work head which is mounted on a base that can be adjusted to the proper angle to feed the work directly into the tool.

Worm Wheel Provides Control

The number of teeth cut is controlled by index change gears. All gear trains in the machine run continuously so that backlash in the gears has no effect on the work being cut. A large worm wheel mounted directly back of the face plate provides accurate control of the gear blank. To insure correct spacing of the teeth the worm wheel is finish hobbed in place on its spindle. In addition, the face of the wheel is split through the center, and the two halves are shifted repeatedly on each other and recut until they match accurately in all positions.

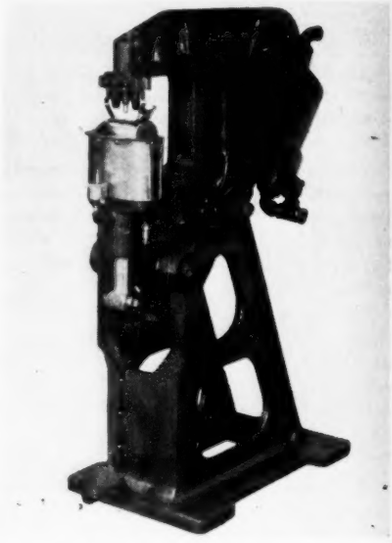
Changes in tool speed and rate of feed are obtained by conveniently located change gears. There are twelve speeds from 11 to 70 strokes per minute. This machine can be arranged only for a coupled drive with a 7½-horsepower motor. Floor space required by the unit measures approximately 90 by 120 inches. Net weight is 36,000 pounds.

◆

Riveter Also Functions As An Assemby Fixture

Hanna Engineering Works, 1765 Elston avenue, Chicago, has introduced a new riveter particularly suitable for assemblies difficult to fit and hold together by hand. In using it as an assembly fixture in addition to driving rivets, the parts can be placed into it progressively and then clamped quickly by power. The application shown in the accompanying illustration is the casing and two handle brackets of an electric flatiron. Each bracket is joined to the casing, with but one rivet. Therefore, the fixture must support, locate and clamp the parts until rivets are driven.

Two rivets are driven simultaneously. The upper dies, which engage the preformed rivet heads, float laterally, sufficiently to compensate for the eccentricity frequently existing between preformed head and shank of the rivet. This is essential as the rivet and the plating of the parts and rivet heads must not be marred.



Hanna riveter supports, locates and clamps assembled parts

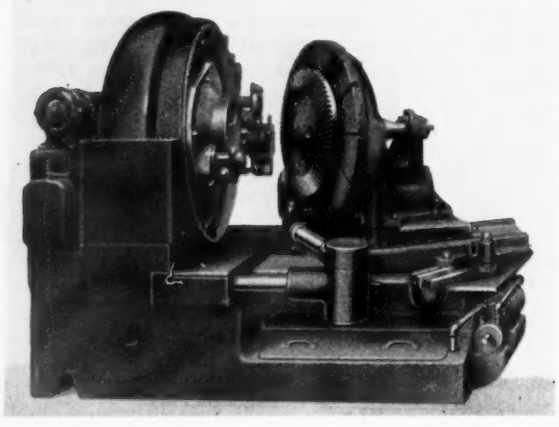
The fixture is opened by foot and the riveter operating valve also is foot actuated. Consequently the operator's hands are free to load and unload the fixture. Riveter tonnage is equally divided between the two sets of rivet dies regardless of normal variation of rivet lengths. This tonnage may be regulated to give just the result desired.

◆

Introduces New Hydraulic-Type Testing Machine

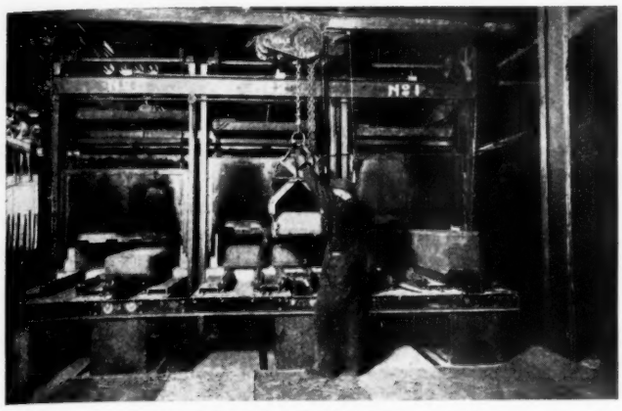
Tinius Olsen Testing Machine Co., 500 North Twelfth street, Philadelphia, recently introduced a new type of hydraulic universal testing machine shown in the accompanying illustration. Flexibility of a hydraulic loading system is combined with convenience of dial reading and higher accuracy possible with dial indicating mechanism in this new unit. The dial is not hydraulic but is mechanically operated under control of levers and a pendulum.

The loading system consists essen-

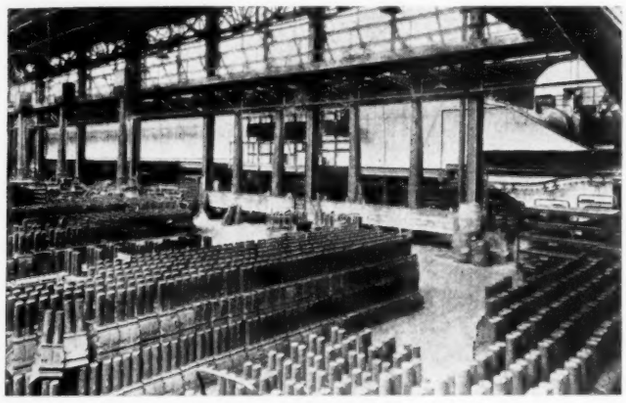


SPIRAL bevel gear planing generator developed by Gleason Works is completely lubricated by an automatic distribution system. The cutting oil is circulated by a separate pump and is strained before it flows back into its reservoir. Frame of the machine is cast in one piece

These automobile people know that "*Insulating Brick save fuel*"



NASH *relies on Nonpareil Insulating Brick to help control the temperature in this 3-chamber continuous recuperative carburizing furnace.*



STUDEBAKER *uses Armstrong's Insulating Brick for efficient and economical insulation of induced draft heaters and drying ovens.*

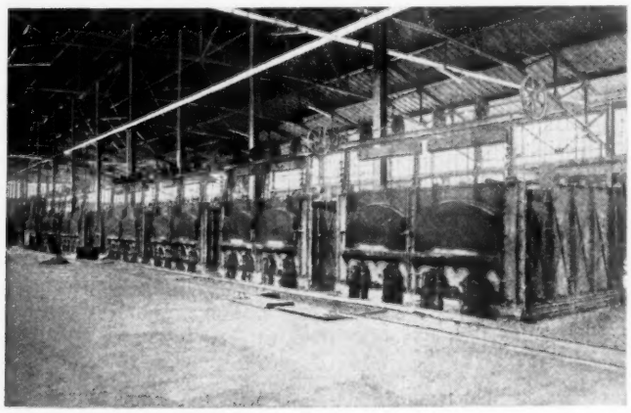
. . . They use Armstrong's and Nonpareil Insulating Brick for high temperature furnaces

AUTOMOTIVE engineers do not tolerate waste! They know materials and methods. For instance, they know the value of efficient high temperature insulation. Engineers for Studebaker, Nash, and other well-known motor car manufacturers have chosen Armstrong's or Nonpareil Insulating Brick—or both—to help control furnace heat.

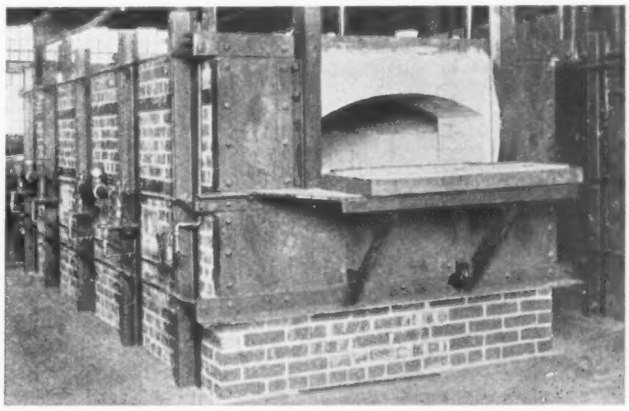
There's double economy in Armstrong's and Nonpareil Brick. There's the fuel saving which they afford—often from 10% to 40%. Added economy comes with machine-sizing, which saves laying time and labor. These brick can be laid up more rapidly; they give a tighter, more efficient wall. In many cases they are laid up dry. And their salvage value is high.

Armstrong's Insulating Brick serve efficiently under temperatures as high as 2500° F., behind the refractory. Nonpareil are recommended up to 1600° F. Both have ample structural strength for any type of construction. They are furnished in standard firebrick sizes, and in special shapes to order. Armstrong engineers will gladly help you plan fuel savings. Sample bricks will be sent on request. Armstrong Cork & Insulation Co., 920 Concord St., Lancaster, Pa.; Canadian offices in Montreal, Toronto, and Winnipeg.

Armstrong's (A) Product



SPRING STEEL BUMPERS *are heated for forging in this furnace of the L. P. Halladay Co., Decatur, Ill. Insulated with Nonpareil Brick.*



THESE HEAT TREATING FURNACES *of a large automobile plant in Detroit are efficiently insulated with Nonpareil Insulating Brick.*

Armstrong's and Nonpareil Insulating Brick

for Furnaces, Ovens, Kilns, and Lehrs

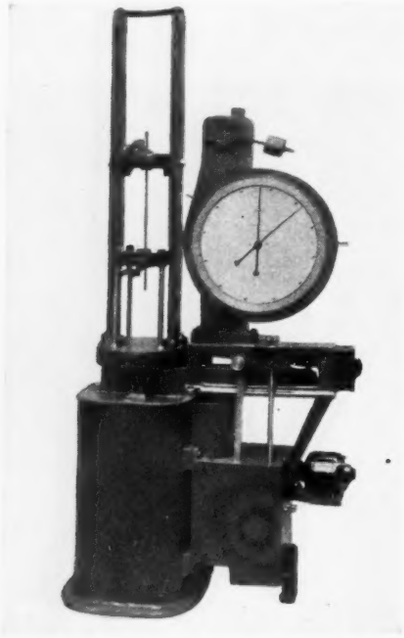
FIFTY-TON gasoline-electric locomotive built for the government by Vulcan Iron Works developed a starting tractive power of 36,000 pounds under test. Its speed is automatically adjusted to the load

tially of hydraulic cylinder and piston located in the base of the machine, the piston being connected to the four straining rods shown attached to and terminating at the moving crosshead gripping the lower end of the tension specimen. As pressure is increased in the hydraulic cylinder the lower crosshead moves down; tension load is applied through the specimen to the upper adjustable crosshead and thence downward through the two side columns to the weighing table.

Weighing table rests on knife edges in levers, and through the system of levers the load is transmitted to a pendulum on the back of the upright housing at rear of dial. The amount of movement of this pendulum is shown by the pointer on the dial which is marked to read directly the load in pounds being applied to the test specimen. On the dial are two pointers, one of which moves forward or backward constantly as the load is increased or reduced. The second pointer is drawn forward by the first pointer and always indicates the maximum load which has been applied to the specimen. The yield points are thereby shown clearly and when the specimen breaks the second pointer remains at breaking load until set back by the operator.

A handle on the top of the lever housing under the dial is marked so that it may be set at various positions to regulate the "inches per minute" travel of the crosshead up or down at various speeds.

The machine shown has a capacity of 20,000 pounds but larger units of this type can be supplied.



Hydraulic testing unit designed by Tinius Olsen Testing Machine Co.

◆

New Hoist for Lathe Chucks Is Operated by Hand

Economy Engineering Co., 2635 West Van Buren street, Chicago, has announced a new hand-operated chuck hoist. The lift is light and easy to move about in congested places, the base measuring 20 inches wide and 40 inches long with 3-inch diameter wheels. Rear wheels are mounted on swivels and those at the front are fixed.

The top of the boom is 6 feet 4 inches above the floor, enabling the chuck to be raised high enough for ordinary lathes. Saddle for the chuck is 6 inches in width and large enough to accommodate chucks of the size usually weighing up to 200 pounds. The mast is arranged to permit the end of the boom to move to a point about 6 inches from the centerline of the machine on either side. This aids in locating the chuck in the proper position for attachment to the lathe shaft.

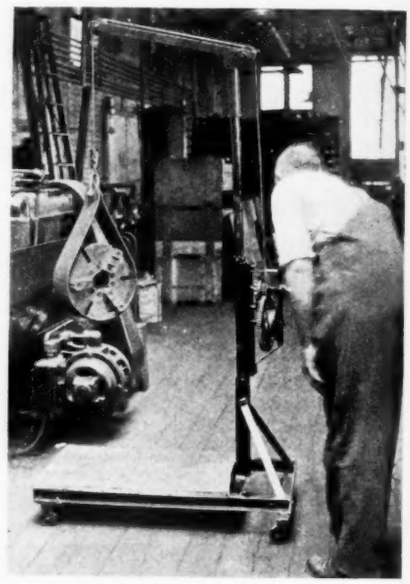
Load Is Held Automatically

Raising of the load is accomplished by turning a crank, and lowering by reversing it, a ratchet and friction disk arrangement automatically holding the load wherever desired. As the belt reaches the platform when lowered, it spreads to permit the chuck to be rolled into place on the lifting strap without difficulty. By turning the crank the chuck is raised high enough to clear the side of the lathe, as shown in the accompanying illustration. The lift then is moved forward, the chuck "spotted" and attached.

◆

Two Engines Operate Gas-Electric Locomotive

Vulcan Iron Works, Wilkes-Barre, Pa., recently delivered to Aberdeen proving ground, Maryland, a new 50-ton, 8-wheel gas-electric locomotive, depicted in the accompanying illustration, for use in local passenger service. Regular yard switching work in handling large railway-type gun mounts and heavy equipment also will be required of the locomotive which has two 4-wheel swivel equalized pedestal-type traction trucks, with longitudinal semielliptical springs.



Hand-operated chuck hoist developed by Economy Engineering Co.

Axles and journals are equipped with roller bearings, and wheels have steel tires 37 inches diameter. The rigid wheel base for each truck is 6 feet 8 inches long. Main frame of the locomotive is of heavy H-beam and channel construction with heavy cast steel end sills. The cab and operator's station are centrally located and equipped for dual control. Installed in the cab are instruments and gages for indicating the voltage and power generated and air pressure in the brake system. Indicators also show

water temperature in the radiator and oil pressure in the engine.

Under dynamometer test this locomotive developed a starting tractive force of upward of 36,000 pounds. The unit is powered for a maximum light running speed of approximately 30 miles per hour with two 175-horsepower 6-cylinder gasoline engines each direct connectetd through a flexible coupling to a 500-volt direct-current generator. A 112-horsepower force-ventilated motor is geared to each axle through single reduction gearing. For light hauling requirements the locomotive can be operated with one engine only, and as more power is required the second engine may be started and cut in without stopping the locomotive.

◆

Butterfly Valve Embodies Pressure-Tight Seat

Freyn Engineering Co., 310 South Michigan avenue, Chicago, recently announced a new valve consisting of a cast iron body lined with Linatex, and a cast iron butterfly disk carried on a steel shaft. The valve disk is made slightly larger than the lining so that when the valve is closed the disk compresses the lining and forms a pressure-tight closure. Resiliency and resistance to abrasion and chemical action are claimed for the valve lining which is manufactured from rubber latex by the Wilkinson process.

Because this type of valve has a nonclogging, self-cleaning seating surface it may be used with dirty water, dirty gas or pulverized fuel. Opening or closing action of the valve is quick and a minimum effort is required to operate it. The valve is particularly adapted for use with blast furnace gas, coke oven gas, natural gas, low pressure water, flue dust and the like. The accompanying illustration shows the construction of the unit.

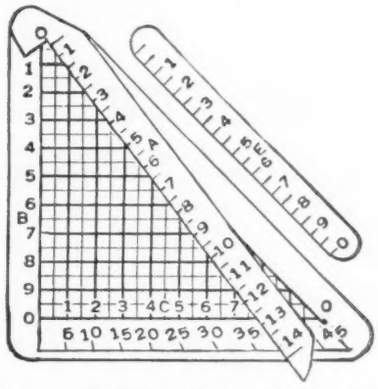
Operating mechanism of new valve built by Freyn Engineering Co.

◆

Calculator Improved by New Reproduction Method

J. S. Ronay, Box 254, Cleveland, has improved the calculator and trigonometric function table devised several years ago to provide a simple means of calculation. A feature of the new calculator is its accuracy obtained by using a special precision graduating machine in its reproduction. Previously, the device had been reproduced by the drawing-photoetching process in which some distortion occurred.

As previously described in the February 16, 1928, issue of IRON TRADE REVIEW, predecessor of STEEL, the base is a 45-degree right triangle which is divided in both directions into 10 equal parts and subdivided decimally. At the apex of this base triangle is pivoted a movable hypotenuse which has decimal unit scales identical with the base. With the device it is possible to read by a single setting all functions of an angle. Multiplication, division, proportions, structural graphic stresses and other applied mechanics problems may be performed on it.



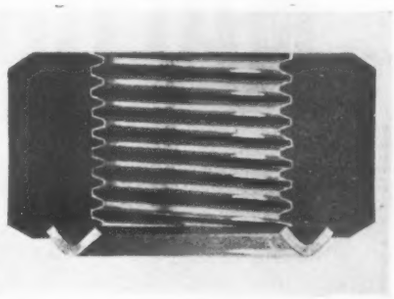
Ronay calculator improved by new method of reproduction

The calculator is obtainable on stiff heavy paper and transparent or opaque pyralin and is made in 8½, 20 and 50-inch sizes, the latter being intended for school and drafting room use.

◆

New Lock Nut Is Designed To Resist Vibration

A. B. Velock, Stockholm, Sweden, has placed on the market a new lock nut that eliminates both up and down movement and twisting of the nut on the bolt. The nut, shown in the accompanying illustration, has a V-shaped locking ring that follows the movements of the seating part, in this way acting as a powerful buffer.



Velock lock nut has V-shaped locking ring which acts as buffer

When the nut is tightened the locking ring is pressed in against the bolt threads. Its inside diameter is reduced, and the ring and the nut are locked on the bolt. All movements along the axis of the bolt are eliminated by the ring and do not affect the nut. As the nut itself does not come in contact with the seating surface, the vibrations acting on the part do not reach the nut, but are taken up by the locking ring.

This lock nut can be unscrewed and retightened without impairing the locking power. The locking ring always is attached.

◆

Molybdenum Is Cushion for Tantalum Carbide Tips

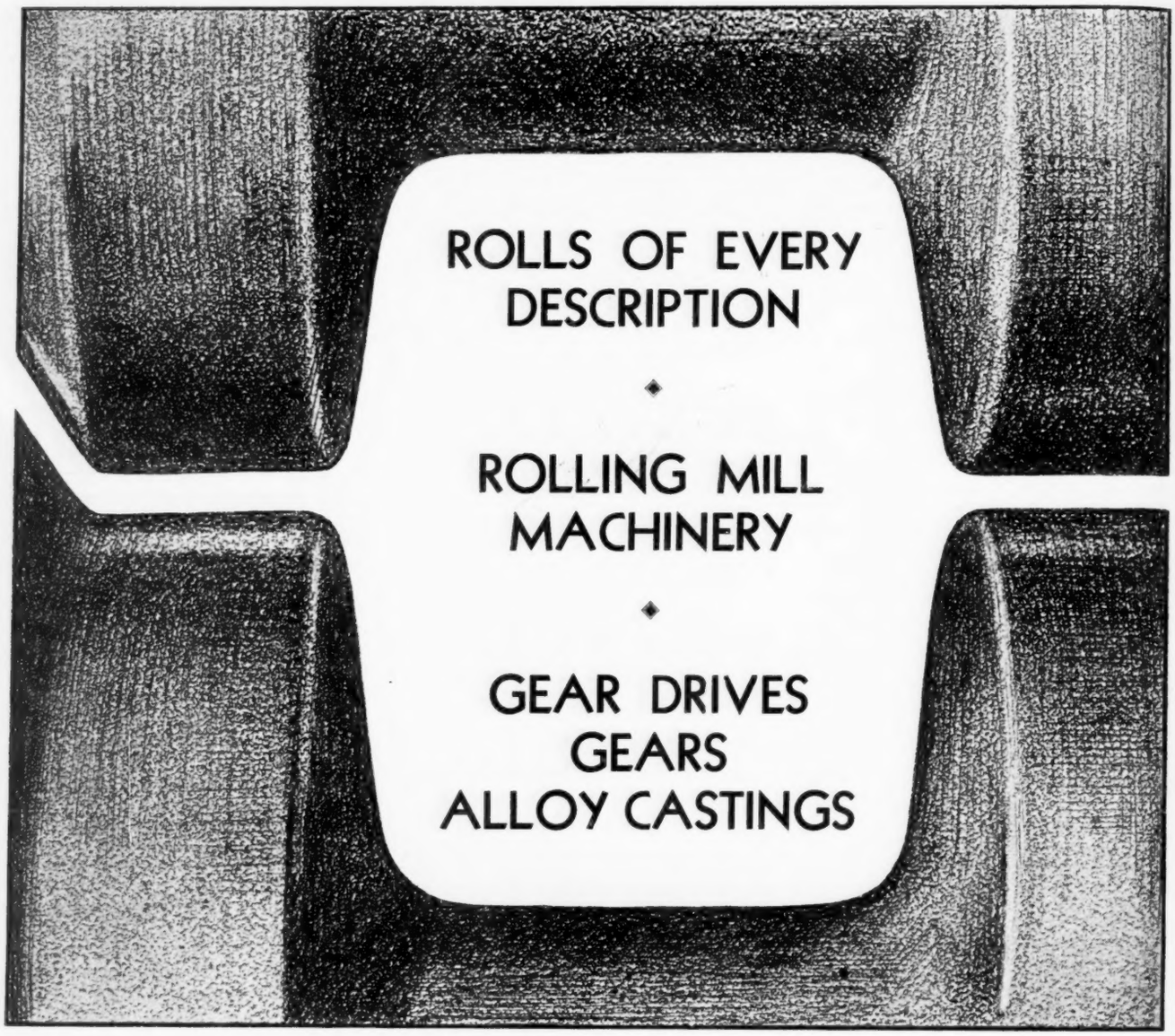
Ramet Corp. of America, North Chicago, Ill., recently has perfected a new method of applying tantalum carbide tips to cutting tools, this embodying an insert of pure molybdenum metal which is brazed between the steel shank and the cutting tip.

Molybdenum has almost the same coefficient of expansion as tantalum carbide, which makes the insert particularly effective in preventing strains or cracks in the brittle cutting tips as tools cool after the brazing operation. Furthermore, because of the ductility of molybdenum the insert absorbs such strains as may develop between the cutting tip and the steel shank under operating conditions.

Molybdenum inserts are said to be particularly desirable in tools where the tantalum carbide tips are long, thin or of unusual shape; or where unusually severe operating conditions are expected. In small tools the tantalum carbide tip now frequently is mounted on a shank of molybdenum.

MACKINTOSH-HEMPHILL

"THE BEST IN ROLLING MILL MACHINERY"



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Confidence Grows, Conservatively

Steelmakers More Anxious for Slow, Consistent Gain Than Unsupported Sentiment — Improvement General — Operations Up Again Fractionally

CONFIDENCE in an upward swing in steel has acquired additional strength, and morale in the industry unquestionably continues to improve. Nevertheless, steelmakers are disposed to be more cautious in gaging immediate prospects and to prevent buoyant sentiment from outrunning actualities, which might lead to a relapse and unwarranted discouragement. The industry is inclined to build slowly, but firmly.

An increase in the steelmaking operating rate from 28 per cent in the last week of October to 31 per cent last week, with indications of another fractional gain this week, faithfully measures tangible progress. This gain has been made without substantial assistance from the automotive industry, which convinces producers late November will see production established at a higher level. Some delay by Ford and Chevrolet in pushing work on new models has led to hesitancy by other manufacturers, but if Ford shortly anticipates requirements for 60 to 90 days, thereby giving assurance of this business, decided stimulus should result.

This conservative attitude is taken despite encouragement from a wide variety of sources. Ferroalloys and special alloys are in better demand, largely for automotive use. From the Northwest come reports that wire products are moving off dealers' shelves more rapidly, probably due to rising grain prices, a condition which has not yet but inevitably will be reflected at mills. A pipe line project requiring 52,500 tons of steel is shaping up; an order for 23,700 tons for another line has been placed. Fresh structural steel inquiry and immediately pending work total 46,524 tons.

In contrast, rail orders are developing with extreme slowness, but as rails generally are rolled in the first half of the year this is no drag on current production. A year ago at this time at Chicago 17 western roads had distributed 400,000 tons of rails; today the sum is 42,000 tons from two roads. Lehigh Valley has ordered 20 locomotives, requiring 500 tons of plates. Northern Pacific will need 2500 tons of plates and shapes for 150 hoppers to be built in its own shops. Western Fruit Express is expecting to buy 300 underframes.

Pipe is featured by one of the largest awards in months, 23,700 tons of 20-inch seamless, for a 100-mile line, to be rolled at the Lorain, O., plant of the National Tube Co., for an unnamed interest. A Standard Oil subsidiary is maturing plans for a 700-mile 10-inch line from Oklahoma to Woods River, Ill., to take 52,500 tons. Additional awards for the Hetch Hetchy water development at San Francisco have placed 9000 tons of pipe on western mill books.

Competition from foreign sources is more in evidence. North African iron ore is being offered at the lowest prices in years. Larger tonnages of foreign steel bars are appearing along the Atlantic coast at prices which Pittsburgh mills cannot meet; 3000 tons of Royal Dutch iron has been placed in Massachusetts and Pennsylvania.

For specific jobs, prices of structural shapes and reinforcing bars are being shaded, in some instances drastically. On the general run of business 1.60c, Pittsburgh, obtains, though emergence of tonnage requirements might impose a strain. Shapes and plates are softer in eastern markets. Concessions are being offered on bolts and nuts. STEEL's composite price of finished steel, however, holds at $48.22.

Purchase of 5000 tons of steelworks scrap at $8.25 by the Steel corporation's mill at Gary, Ind., has stabilized the market there. The steelworks scrap composite remains $8.25. STEEL's iron and steel composite also is steady at $30.63.

Composite Market Averages

	Nov. 14	Nov. 7	One Month Ago (Oct., 1931)	Three Months Ago (Aug., 1931)	One Year Ago (Nov., 1930)	Ten Years Ago (Nov., 1921)
Iron and Steel Composite	$30.63	$30.63	$30.74	$31.05	$31.92	$34.71
Finished Steel Composite	48.22	48.22	48.22	48.72	49.62	53.69
Steelworks Scrap Composite	8.25	8.25	8.50	8.79	11.17	11.91

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite**:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. **Steelworks Scrap Composite**:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Nov. 14, 1931	Oct., 1931	Aug., 1931	Nov., 1930
PIG IRON				
Bessemer, del. Pittsburgh	$17.76	18.16	18.26	18.76
Basic, valley	15.00	16.50	17.00	17.00
Basic, eastern del. eastern Pa.	16.00	16.00	16.75	17.50
No. 2 foundry, del. Pittsburgh	17.76	18.16	18.26	18.26
No. 2 foundry, Chicago	17.00	17.20	17.50	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.00	18.00	18.25	18.25
**No. 2X, Eastern del., Phila.	16.01	17.01	17.51	19.26
Malleable, valley	16.50	16.90	17.00	17.50
Malleable, Chicago	17.00	17.10	17.50	17.50
Lake Superior, charcoal, del. Chi.	25.04	25.04	27.04	27.04
Gray forge, del. Pittsburgh	17.13	17.53	17.63	17.63
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.35	2.40	2.40	2.55
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.00	29.00	31.00
Sheet bars, open-hearth, Pitts.	29.00	29.00	29.00	31.00
Billets, open-hearth, Pittsburgh	29.00	29.00	29.00	31.00
Wire rods, Pittsburgh	35.00	35.00	35.00	36.00

	Nov. 14, 1931	Oct., 1931	Aug., 1931	Nov., 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.89	1.89	1.89	1.89
Iron bars, Chicago	1.65	1.70	1.70	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.68	1.76	1.76	1.71
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.73½	1.80½	1.80½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	1.90
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.40	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.90	2.90	2.90	2.95
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.55	2.55	2.55
Sheets, No. 24 galvan., Chi.	3.05	3.05	3.05	3.15
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.90	1.90	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	5.00	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.45	10.70	13.10
Heavy melting steel, eastern Pa.	8.00	8.00	8.55	11.50
Heavy melting steel, Chicago	7.75	7.75	8.25	10.20
No. 1 wrought, eastern Pa.	9.50	9.50	9.75	13.50
No. 1 wrought, Chicago	8.00	8.00	8.25	10.00
Rails for rolling, Chicago	10.00	10.40	10.50	13.10

Sheets

Orders from Implement Builders Improve—Demands for Automotive Industry Slow

SHEET PRICES, PAGE 57

Youngstown, O.—A dozen more independent sheet mill units started Nov. 9 in this district but whether they could continue into the week of Nov. 16 was uncertain. Accumulation of a number of small, miscellaneous orders caused the increase in operating rates. More consumers have entered the market, leading to sales of a wide range in grades. Buyers of autobody sheets continue to place orders and to release specifications with caution. Full-finished mill units here are fairly well occupied. The best opinion in the trade appears to be that present operating rates may continue into early December at least. Quotations on all grades of sheets continue firm.

New York—Pronounced dullness continues in sheets, the volume of business so far this month being slightly under that of the corresponding period in October. Inactivity, however, has resulted in no deviations from published prices.

Philadelphia — Increased automotive activity is beginning to be reflected in the sheet market here, with fairly good orders in early prospect. An improvement in specifications also is noted in some other important consuming lines.

Buffalo—Purchasing of sheets has improved substantially during the past few weeks. Some producers have sold more for local delivery than at any time this year. Operations continue to be restricted, however, by small purchasing by principal consumers in outside territory.

Pittsburgh — Sheet business is fairly well maintained, with occasional gains noted in demands for the automotive industry. Lack of active buying by the two leading automotive interests, however, leaves total business from the industry somewhat below the volume that had been anticipated for this period. Better buying is looked for before the end of the month. Orders from farm implement builders, although still light, are considerably improved over the preceding several months. Demand from other consumers shows little change. Mill operations continue around 25 per cent. Prices generally are steady at 2.40c for hot-rolled annealed sheets, 2.90c for galvanized, 1.85c for blue annealed, and 3.10c for autobody.

Cleveland—Sales continue small and irregular. Not much improvement is anticipated for the remainder of the year in forward commitments. The better tone in inquiry has not disappeared, but it did not result in additional orders last week. Westinghouse Electric & Mfg. Co.'s concentration of production of refrigerator shells at Mansfield, O., may provide a new outlet for enameling stock. One of the leading barrel-makers here was on full time operation last week, but this week expects to work only two days. The price structure is steady, with 2.40c, base, quoted on No. 24 hot-rolled annealed, and 2.90c on galvanized.

Chicago—Ten hot mills at Milwaukee of the leading independent sheet producers have resumed for awhile, largely to clean up accumulations of sheet bars there. This unit has been operating intermittently for several months. Sheet orders are somewhat slower than a week ago. Base prices are reported well maintained at 2.50c, Gary and Indiana Harbor, for hot-rolled annealed; 3.00c, mills, for galvanized; and 1.95c, mills, for blue annealed.

Cincinnati—A steady upward trend has been started, it is believed by sheetmakers here, who note improvement in general inquiry and heavier releases for automotive manufacture. Production schedules are being slowly increased.

Birmingham, Ala.—Demand continues fairly good, with mill operations at about 50 per cent. Small plants are buying regularly.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.33c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75½c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary base	2.75c
St. Louis, del.	3.00½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$4.75

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c
Woven wire fencing, (9-11 ga.)	$55.00 and $60.00
(12½ ga. and lighter)	60.00 and 65.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.73½c to 1.78½c
New York, delivered	1.88c
Boston, delivered	2.00c
Chicago, base	1.70c
Cleveland, base, for railroads	1.65c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.65c to 1.70c
Pacific Coast, c.i.f.	1.85c to 1.95c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.68c to 1.73c
New York, del.	1.80¼c to 1.85¼c
Boston, del.	1.98½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.05c
Cleveland, base, local del.	1.65c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.89c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.65c
New York, delivered	1.88c to 1.98c
Philadelphia, delivered	1.84c to 1.94c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.50c to 1.60c
Chi., rail steel	1.30c to 1.50c
Chi., rail steel, bridge and culvert	1.40c to 1.50c
Philadelphia, cut lengths	2.04c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.45 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.80	Cr., Ni., Van.	1.50
4100 .15 to .25		Carbon Van.	0.95
Mo.	0.50	9250 (flats)	0.25
4600 .20 to .30 Mo.		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.60c to 1.65c
Do, 6 1/16 to 24-in., Pitts.	1.50c to 1.55c
Hot strip, bands 6 in. and under, Chicago	1.75c
Do, 6 1/16 to 24 in.	1.65c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do., Chicago	1.85c to 1.95c
Cold rolled strip, Pitts., Cleveland	2.05c to 2.15c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard bess. and open-hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 and 10 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off
Tire bolts ..... 60, 10 and 10 off
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 and 10 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. 80-5off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c
Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.

Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Short-Term Contracting and Specifications Better at Chicago —Foreign Competition in East

BAR PRICES, PAGE 57

Chicago — Moderate improvement in short-term contracting comes chiefly from automotive and implement plants. The increasing automotive tonnage also is aiding specifications, which are slightly above the average of the last 30 days. One producer finds contract sales the heaviest since the end of September. While one implement maker now has all its plants operating at about 50 per cent, others will not resume until December. Prices of 1.60c and 1.65c have been made to fabricators of deformed bars to meet low public bids, but 1.70c is the base for miscellaneous buying. Bar mills are slightly under 30 per cent. Alloy bar production is at 25 to 30 per cent.

New York—Sales of foreign bars continue to cut into domestic business. Domestic sellers quote 1.60c, Pittsburgh. The spread between this price and that offered by foreign sellers is too wide to provide common ground for competition. Domestic mills are relying principally on service and a larger variety of sizes to attract business. Common iron bars are unchanged at 1.60c to 1.70c, Pittsburgh, with 1.65c possibly the most representative price.

Philadelphia — Demand for soft steel bars is spotty with prices unchanged, at 1.60c, Pittsburgh. Common iron bars are 1.60c to 1.70c, Pittsburgh.

Pittsburgh—Although prospects for better business in steel bars are favorable, specifications are slow to improve. Hesitancy of the automotive industry to take larger tonnages is responsible for the lack of improvement in business. Demands of most other consumers are steady. The market continues 1.60c, Pittsburgh.

Cleveland—Aside from routine orders for restricted amounts, the steel bar market displays little feature. The Cleveland base of 1.65c is held on light buying, with a rumored concession to 1.60c last week found to be without basis. Alloy bars are 2.65c, base, f.o.b. mill. Inquiry for first quarter of 1932 is light.

Birmingham, Ala.—The market is quiet. The Gulf States Steel Co.'s bar mill is down completely.

Arthur A. Crafts Co., Boston, manufacturer of industrial diamond tools, has moved to 161 Brookline avenue, where larger space is available for increased production.

Tin Plate Contracting Slow; Operations Steady

Tin Plate Prices, Page 57

Pittsburgh—Tin plate demand is steady and operations are maintained at 45 per cent, the same as during the preceding several weeks. Little change is looked for in specifications over the remainder of the year, with operations by some producers supported by production of anticipated material. Contracting for the first half of 1932 continues slow. Consumers being in no hurry to make commitments for that period.

Cold-Finish Mills Expect Auto Demand

Cold Finished Prices, Page 57

Pittsburgh—Cold-finished steel bar producers still await active demand from automotive interests. Recent specifications are little changed from the rate of the several preceding weeks, but there is considerable optimism over better business the latter part of November. Orders are for only small lots with the market continuing steady at 2.10c, Pittsburgh.

Cleveland—No increases have been felt in demand for cold-finished steel bars, at least at the rate mill interests expected by this time for the much-delayed automobile and auto parts makers' releases. The 2.10c, Cleveland, figure is unchanged.

Plates

Two Thousand Tons Placed for Western Oil Storage Work— Eastern Market Is Easier

PLATE PRICES, PAGE 57

New York—Apart from certain large structural jobs, locomotive orders requiring 1280 tons of plates, and pipe work for the city, needing 3300 tons, are dominating attention of platemakers. Specifications for the pipe are expected out soon. The market continues easy at 1.70c, Coatesville, Pa., for carlots.

Philadelphia—General demand for plates is dull, with the market now 1.73½c to 1.78½c, Philadelphia, for carloads. Placing of 20 locomotives by the Lehigh Valley should result in an early award of 800 tons of plates.

Pittsburgh—Plate demand lacks the stimulus of large orders, business being made up mainly of small miscellaneous lots. No action is expected for several days on the inquiry of the Mississippi Valley Barge Line Co. for barges requiring 1100 to 1400 tons of plates and shapes. Action on other pending barge work is deferred. Plates generally are 1.60c, Pittsburgh.

Cleveland—There was no improvement in orders for steel plates last week, but a slightly improved tone in inquiry. On the 250 tons for the municipal tank, Ashland, O., bids on which went in Nov. 6, Youngstown Boiler & Tank Co., Youngstown, O., was low and received the order. General Electric Co., has placed 300 tons for welded steel tanks for Cleveland with Blaw-Knox Co., Pittsburgh. On the average order 1.60c, Pittsburgh, applies.

Chicago—About 2000 tons of oil storage tank work has been placed in Oklahoma and on the Pacific coast. Evanston, Ill., is readvertising for 1500 tons for a waterworks tank. A small amount has been placed for the Kansas City postoffice. Plate prices are nominal at 1.70c, mills. Operations are 20 to 25 per cent.

Birmingham, Ala. — Tankmakers and other users of steel plate are buying sparingly, and production is governed accordingly. Some western orders for plates are anticipated.

Contracts Placed

2000 tons, oil storage tanks in Oklahoma and on Pacific coast, to several unstated fabricators.

782 tons, 114-inch siphon, Red Mountain Bar, Hetch Hetchy water project, San Francisco; to Berkeley Steel Construction Co., Berkeley, Calif.

300 tons, welded steel tanks for General Electric Co.'s Cleveland plant, to Blaw-Knox Co., Pittsburgh.

250 tons, municipal tank, Ashland, O., to Youngstown Boiler & Tank Co., Youngstown, O.

165 tons, boiler plates, navy department, Norfolk, Va., to Bethlehem Steel Co., Bethlehem, Pa.

135 tons, additional section and discharge piping, Little Falls pumping station, Paterson, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.
100 tons or more, 450,000-gallon steel standpipe, Rocky Hill, Conn., to Chicago Bridge & Iron Works.

Contracts Pending

1800 tons, six water tanks, Long Beach, Calif. Bids opened.
1500 tons, waterworks storage tank for Evanston, Ill.; readvertised.
160 tons, steel flooring, partitions and shelving, United States assay office, New York; McHarg Co., Inc., New York, low on general contract.

Semifinished Steel Business Still Light

Semifinished Prices, Page 68

Pittsburgh—Finishing mills are placing only small orders for semifinished steel, total volume of which shows little change over the past several weeks. Buying is for early requirements only, consumers carrying little stocks. Shipments reflect the lack of material change in schedules of bar, sheet and strip mills. Prices generally hold at $29, Pittsburgh, for rerolling billets, slabs and sheet bars, with forging billets and wire rods continuing $35.

Byers Prices Wrought Black Sheets at $3.70

A. M. Byers Co., Pittsburgh, now is producing genuine wrought iron sheets, not manufactured on a commercial basis for many years, at the plant of the Canonsburg Steel & Iron Works, rolled from No. 10 to 28 gage, up to 38 inches wide and in lengths up to 144 inches.

A base price on black sheets of $3.70 per 100 pounds in carload lots and $4.10 less carload has been established, with the usual sheet extras for gage, width, length and cutting. Galvanized sheets will carry a base price of $4.45 carload and $4.85 less carload.

Economic Programs Are Decried at Convention

(*Concluded from Page* 20)

Agazim & Co., power plant equipment, Chicago.

The progress report of the oxyacetylene committee, of which W. H. Ludington, Air Reduction Sales Co., New York, is chairman, outlined the development of the larger new assortment of blowpipes or torches for welding everything from sheet metal to heavy castings. This survey, started four years ago, was compiled by the committee and a group of 50 others.

The report stated that application of oxygen and acetylene in heat treatment has wide use in automobile repairs. Common use of the oxyacetylene flame thus is found where localized heating is required. It was pointed out also that all of the corrosion and heat-resisting alloys can be welded; and that oxyacetylene cutting torches have been applied to much greater extent in the cutting to length of steel billets and in the cutting to shape of slabs, plates and structural shapes.

Railroads

Lehigh Valley Buys 20 Locomotives—Expect Santa Fe Car Inquiry For Freight Cars

TRACK MATERIAL PRICES, PAGE 57

New York—Atlantic Coast Line has ordered 1200 tons of rails for one of its subsidiary lines with Tennessee Coal, Iron & Railroad Co., in addition to a recent order with the same mill for 7500 tons. Magor Car Corp., New York, will build 50 ballast cars for the Southern Persia railroad.

American Car & Foundry Co. has been formally awarded 500 subway cars for the local board of transportation, previously noted as tentatively placed with this builder.

Philadelphia—Lehigh Valley has placed 20 large locomotives, evenly with American Locomotive Co., Dunkirk, N. Y., and Baldwin Locomotive Works, Eddystone, Pa. This order involves over $2,500,000. Little rail purchasing is expected to be out here much before January, 1932.

Four locomotives for a foreign government are expected to be placed with Baldwin Locomotive Works, Eddystone, Pa., shortly.

Pittsburgh—The market for railroad material is quiet in the absence of inquiry and new business. More roads are expected in the market over the next several weeks for annual rail tonnages but little hope is entertained of better demand for cars. Light rails continue quiet.

Cleveland — Small, miscellaneous lots make up railroad steel purchases, there being little of consequence pending with the market here devoid of rail fastening or equipment inquiry.

It may be six or eight months before a rail inquiry is expected from the Wheeling & Lake Erie railroad, as it still has rails on the mill books to release and in addition has some rails rolled but unlaid. No inquiry is looked for from the Nickel Plate or Erie for at least two months.

Chicago—Steel mills are receiving specifications for about 2500 tons of light shapes and plates for the building of 150 hopper cars for Northern Pacific railroad. Western Fruit Express is reported to be in the market for 300 steel underframes. While it is indicated some rail business may be placed before the end of the year, 1932 commitments apparently will be inconsequential. Budgets for next year have not yet been prepared. The only rail orders of importance placed this season with western mills have been 43,000 tons for the Santa Fe and 4000 tons for Northern Pacific. A year ago 17 roads had placed a total of about 400,000 tons with western mills. Fairly steady releases of track fastenings are noted.

Car Orders Placed

Board of Transportation, New York, 500 subway cars, to American Car & Foundry Co., New York, previously noted as having tentatively been awarded this contract.
Southern State Railway of Persia, 50 ballast cars, to Magor Car Corp., New York.

Locomotives Placed

Lehigh Valley, 20 locomotives, 10 each to American Locomotive Co., Dunkirk, N. Y., and Baldwin Locomotive Works, Eddystone, Pa.

Rail Orders Placed

Atlantic Coast Line, 1200 tons for subsidiary line, to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., in addition to 7500 tons recently placed with the same interest.
Board of Transportation, 1270 tons, to Bethlehem Steel Co., Bethlehem, Pa.
Port development, Albany, N. Y., 200 tons of track accessories, to Bethlehem Steel Co., Bethlehem, Pa.; in addition to 1100 tons of rails noted as placed in the Nov. 9 issue of STEEL; switch material to Bethlehem Steel Co. and Ramapo Ajax Corp.

Car Orders Pending

Santa Fe, several hundred freight cars; inquiry in three weeks.
Western Fruit Express, reported in market for 300 steel underframes.

Locomotives Pending

Navy, 35-ton gasoline-electric locomotive, Lakehurst, N. J.; bids Nov. 17.

Structural Shapes

Two Jobs at New York Will Take 7000 Tons—8000 Tons Bought at Chicago—Name Contractor on 8000-Ton Bridge — Pending Total Heavier but Awards Light

STRUCTURAL SHAPE PRICES, PAGE 57

New York—Close to 7500 tons will be required for an armory, Jamaica, and the Bronx jail, about to come out for general contract. The department of health building, 3500 tons, was also expected out for construction bids this week. While there is a slight increase in fresh inquiry, a good part of the work now on the boards is not expected to be bought until January. Booth & Flinn Co., Pittsburgh, is low on the Albany-Rensselaer bridge which will take about 8000 tons of shapes, bars and piling. Structural steel awards in October were low for the year, according to the Structural Steel Board of Trade, 10,745 tons, against 47,284 tons in September. Bridges and engineering work are not included in the compilation.

The comptroller has overruled the protest in connection with the low bid on the Supreme Court building, Washington, and the general contract is expected to be awarded the George H. Fuller Co. this week.

Boston—Keen competition for structural work, which is fairly heavy, features. Pending tonnage indicates a fair volume during the next few weeks. For bridges on the Framingham-Natick route several hundred tons have been placed by the Ashland contractor, while 1500 tons for a war memorial building at Worcester went to the local fabricator. New England shops lost the Pawtucket postoffice.

Philadelphia — Structural activity is slightly improved, shapes being unchanged at 1.65c to 1.70c, carlots, nearest mill. Specifications for the Franklin memorial building here, to take about 3000 tons, are expected out Dec. 1.

Pittsburgh—New work in fabricated structural steel consists mostly of small lots, inquiry for which is more active than in more than a month. Specifications for plain material are fairly steady with the market usually quoted 1.60c, Pittsburgh.

Cleveland—Contractors have been named on the state bridges which went in Nov. 6. A bridge for the state, Ottawa county, taking 208 tons, goes in Nov. 17 along with smaller jobs. The sheet piling in the White City sewage plant has been bought by American Construction Co., contractors, after sharp competition by two mill interests. Plain shapes are 1.60c, base Pittsburgh.

Chicago—About 8000 tons of structural work has been placed, including the formal booking of 4000 tons for two Chicago schools, awarded two months ago. James Stewart Corp. is buying 1500 tons for a grain elevator for the port authority at Albany, N. Y. Wide flange beams are steady at 1.70c, Chicago. Bids will be received Nov. 24 for 4000 to 5000 tons for three bascule bridges at Joliet, Ill.

Contracts Placed

2000 tons, Cedar street bridge, Peoria, Ill., to Wisconsin Bridge & Iron Co., North Milwaukee, Wis.

1500 tons, war memorial building, Lincoln square, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester, Mass.; George A. Fuller Co., New York, contractor.

1360 tons, piling, White City sewage plant, Cleveland, divided between Inland Steel Co., Chicago, and Bethlehem Steel Co., Bethlehem, Pa., by American Construction Co., Cleveland, contractor.

1072 tons, two bridges, one over Tangipahoa river, the other over Boaguechitu rivers, La., to Missouri Valley Bridge & Iron Co., Leavenworth, Kans., through W. H. Groome & Son.

950 tons, public school 85, Bronx, (New York), to Harris Structural Steel Co., New York; H. R. H. Construction Co., New York, contractor.

675 tons, low level mixing plant for Six Companies Inc., Boulder City, Calif., to International-Stacey Corp., Los Angeles.

600 tons, additional tonnage for Chicago Century of Progress building, to Bates Expanded Steel Truss Co., East Chicago, Ind.

Awards Compared

	Tons
Awards, week ended Nov. 14	**16,055**
Awards, week ended Nov. 7	**19,491**
Awards, week ended Oct. 31	**23,022**
Awards this week in 1930	**29,042**
Av. weekly awards, 1930....	**35,242**
Av. weekly awards, 1931..	**35,122**
Av. weekly awards, Oct.....	**22,647**
Total awards to date, 1930..	**1,678,350**
Total awards to date, 1931..	**1,650,728**

500 tons, addition, public school 79, Whitestone, Queens (New York), to Harris Structural Steel Co., New York.

500 tons, plant addition, Chester, Pa., Ford Motor Co., to Morris, Wheeler & Co. Inc., Philadelphia.

500 tons, Lakeland county hospital, near Camden, N. J., award to Belmont Iron Works, Philadelphia, reaffirmed.

495 tons, three truss span bridges, Indiana, to R. C. Mahon Co., Detroit.

460 tons, high school, Camden, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

450 tons, addition to ice cream plant, Brooklyn, N. Y., to American Bridge Co., Pittsburgh, through Paul M. Sterling.

450 tons, postoffice, Pawtucket, R. I., to Bethlehem Fabricators Inc., Bethlehem, Pa.; E. S. Moore & Son, Kokomo, Ind., contractors.

450 tons, power house, Wyandotte, Mich., to unstated fabricator.

412 tons, plant, Ypsilanti, Mich., for Ford Motor Co., to Whitehead & Kales Co., Detroit.

400 tons, bridge repairs for Indiana Harbor Belt Line railroad, Chicago to American Bridge Co., Chicago.

370 tons, state highway bridge, Ionia, Mich., for Michigan state highway department, to Whitehead & Kales Co., Detroit.

355 tons, Second Presbyterian church, Newark, N. J., to Goeller Steel Construction Co., Newark.

320 tons, double hangar, annexes and boiler house annex, Fort Leavenworth, Kans., to Belmont Iron Works, Philadelphia; Harman Engineering Co., Chicago, contractor.

260 tons, school, Trenton, N. J., to N. A. K. Bugbee, Trenton.

260 tons, paper mill plant building, Cloquet, Minn., to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, highway bridges in Minnesota, to Minneapolis-Moline Power Implement Co., Minneapolis, and Illinois Steel Bridge Co., Jacksonville, Ill.

230 tons, bridge work for Pere Marquette railroad, to Mt. Vernon Bridge Co., Mt. Vernon, O.

225 tons, addition, Physicians & Surgeons building, New York, to Taylor-Fichter Steel Construction Co., New York.

213 tons, ethical culture school, Fieldstone, N. Y., to Ingalls Iron Works Co., Verona, Pa.

198 tons, two bridges over San Juan creek, San Benito county, Calif., to unnamed interest; G. J. Ulrich Co., Modesto, Calif., contractor.

160 tons, Kress store, Bakersfield, Calif,. to International-Stacey Corp., Los Angeles.

160 tons, highway bridge, Fulton county, Ill., to Clinton Bridge Works, Clinton, Iowa.

150 tons, grade separation work, LaCrosse, Wis., to Worden-Allen Co., Milwaukee.

150 tons, nurses' home, Phillipsburg, Pa., to Griffith-Custer Steel Co., Johnstown, Pa.

120 tons, high school gymnasium, Galveston, Tex., to Houston Structural Steel Co., Houston, Tex., 22 tons bar joints to Concrete Engineering Co., Omaha, Nebr.; M. C. Bowden, Galveston, contractor.

110 tons, manufacturing building, Rensselaer, N. Y., to Lackawanna Steel Construction Co., Buffalo, through White Construction Co.

110 tons, building, Queens general hos-

pital, New York, to Douglas Iron Works, Brooklyn, N. Y., through Camlou Construction Co.

110 tons, highway bridge, Minnesota, to Des Moines Structural Steel Co., Des Moines, Iowa.

105 tons, extension to plant, Hudson Silk Hosiery Co., Charlotte, N. C., to Southern Engineering Co., Charlotte.

100 tons, 3-story addition, Hubert J. Wright Inc., Syracuse, N. Y., to Syracuse Engineering Co. Inc., Syracuse, N. Y.

100 tons, bridge, Sheboygan, Wis., to Worden-Allen Co., Milwaukee.

100 tons, manufacturing building for industrial clearing district, Chicago, to Gage Structural Steel Co., Chicago.

100 tons, garage, sewer department, Washington, to Virginia Bridge & Iron Works, Roanoke, Va.

100 tons or more, shapes and bars, bridges, Aiken county, S. C., to Virginia Bridge & Iron Co., Roanoke, Va., and Kilby Car & Foundry Co., Birmingham, Ala.; Goodwyn & Hurt, Montgomery, Ala., contractors.

100 tons or more, addition, Baltimore Tube Co., Baltimore, to Dietrich Bros., Baltimore.

Unstated tonnage, apartment, Oak Lane Plaza Corp., Twelfth street and Sixty-ninth avenue, Philadelphia, to Max Corchin, Philadelphia.

Contracts Pending

8000 tons, shapes, bars and piling, Albany-Rensselaer bridge; Booth & Flinn Co., Pittsburgh, low on general.

5000 tons, three bascule bridges at Joliet, Ill.; bids Nov. 24.

4000 tons, 104th regiment armory, Jamaica, N. Y.

3500 tons, jail, Bronx (New York).

3500 tons, building, department of health, New York, out for bids.

3000 tons, Franklin memorial building, Philadelphia; specifications expected Dec. 1.

3000 tons, estimated, 20-story office building, First National Bank, Wall and Broadway, New York.

2000 tons, additional for Motorists' Association of Illinois, Twenty-fourth street and Michigan avenue, Chicago; 300 tons previously awarded to American Bridge Co., Chicago.

1500 tons, grain elevator for port authority at Albany, N. Y.; James Stewart Corp., Chicago, general contractor; to be purchased in small lots.

1500 tons, library and school building, Columbia university, New York.

1100 tons, hangar and shops, Wheeler field, T. H.; Kenneth Colburn, Pasadena, Calif., contractor.

1100 tons, building, Union club, New York.

1100 tons, gymnasium, University of California, Berkeley, Calif.; bids opened.

1000 tons, bridgework, Illinois; bids Nov. 30.

800 tons, coal crushing plant, Cold Springs, N. Y., for Hudson River Stone Co.

800 tons, public school 89, New York.

650 tons, additional buildings, state hospital, Creedmore division, Brooklyn, N. Y.

500 tons, pier 9, East river, New York; J. Rich Steers Inc., low.

400 tons, state bridge, Elkton, Md.

355 tons, steel beam bridge, Columbus-Sandusky road, Delaware county, O., for Ohio state highway department; project No. 421; also 65 tons reinforcing; Uncapher & Gillespie, Marion, O., contractors.

326 tons, bridgework, Oklahoma state highway commission; bids Nov. 24.

300 tons, bridge repairs, Boston & Albany railroad, Springfield, Mass.

300 tons, state capitol addition, Dover, Del.; Ralph Herzog, Philadelphia, low on general contract.

250 tons, high school, Camden, N. J.

250 tons, bridge, Pennsylvania railroad, near Elkton, Md.; general contractors bids being taken; steel to be placed later under Clayton act.

250 tons, Eleventh street bridge, Wilmington, Del.; Seeds & Derham, Philadelphia, contractors; company will also place 450 tons sheet steel piling and 200 tons bars.

210 tons, crossover, Pelham, N. Y.

208 tons, bridge, Fremont-Oak Harbor road, Ottawa county, O., for Ohio state department of highways; O. W. Merrell director, Columbus, O.; bids opened Nov. 17. Included, 53 tons reinforcing steel.

200 tons, warehouse, Flushing avenue, Brooklyn, N. Y.

200 tons, two state bridges, Maryland; general contractors' bids Nov. 17.

175 tons, state bridge, Rensselaer county, N. Y.

175 tons, acid building, Merrimac Chemical Co., Everett, Mass.

175 tons, bridgework, Comanche county, Okla., for Oklahoma state highway commission; bids Nov. 17.

150 tons, service station, Allegheny avenue, Philadelphia, for Philadelphia Electric Co.

150 tons, reconstruction Reading railroad bridge near Sixteenth street, Philadelphia.

150 tons, piling, Belmar, N. J.

138 tons, building, state hospital, Norristown, Pa.; A. W. Funk & Co., Philadelphia, contractor.

135 tons, bridge, Raritan river railroad, Middlesex county, N. J.

125 tons, Snyder county bridge, Pa.

107 tons (57 tons shapes and 50½ tons reinforcing steel), two postoffices, Memphis and Georgetown, Tex.; Landis & Young, 603 South Jordan avenue, Bloomington, Ind., contractors.

100 tons, two bridges, Crawford and Ashland counties, O., for Ohio state department of highways; O. W. Merrell, director, Columbus, O.; bids opened Nov. 17.

Concrete Bars

Moderate Tonnage in Contractors' Hands Awaits Buying—Mill Shipments Heavy but Prospective Business Slowing — 4700 Tons Near Closing at Cleveland

REINFORCING BAR PRICES, PAGE 57

Chicago—Reinforcing bar shipments are heavy, but prospective business, aside from the Mississippi river dam construction, is slowing down. Billet bars range at 1.50c to 1.60c. About 500 tons is to be bought shortly for the Ft. Wayne, Ind., sewage treatment works, financing arangements having been completed.

Boston—Concrete bar tonnage pending is fairly heavy, although largely confined to public works. Small shipments are fairly active and prices are steadier. For subway work 280 tons were placed with a midwest mill.

New York—New inquiry for concrete bars has declined, although a moderate tonnage remains to be closed by contractors. Prices are unchanged and steady on smaller shipments. Awards include the masonry piers, Triboro bridge, and a city garage, Newark. Concrete Steel Co. was awarded contract for bars, prison buildings, Comstock, N. Y.

Philadelphia—Although undergoing a seasonal decline in business, reinforcing bar prices are firm at 1.60c, Pittsburgh mill lengths, Pittsburgh, and 1.75c cut lengths in carlots.

Pittsburgh—Mill backlogs of reinforcing bar remain fairly large but new business and inquiry are declining. Activity in this district is quiet. The market usually is 1.60c, Pittsburgh, for mill lengths.

Cleveland—A local warehouse is reported low on 4700 tons of reinforcing steel for the municipal sewage plant here. E. H. Latham Co., Columbus, O., has placed 927 tons for the Bedford, O., grade crossing with Buffalo Steel Co. Thirteen small bridges for the state highway department in various counties will take 265 tons in aggregate, bids Nov. 17.

Awards Compared

	Tons
Awards, week ended Nov. 14	4,189
Awards, week ended Nov. 7	7,130
Awards, week ended Oct. 31	4,177
Awards this week in 1930..	6.505
Av. weekly awards, 1930..	6,990
Av. weekly awards, 1931....	6,942
Av. weekly awards, Oct.....	7,886
Total awards to date, 1930..	332,022
Total awards to date, 1931	326,100

Contracts Placed

927 tons, grade separation, Bedford, O., state route No. 8, Ohio state department of highways project No.

(*Concluded on Page* 65)

Strip

Demand Still Awaits Reanimation of Automotive Industry—Prices Nominally Steady

STRIP PRICES, PAGE 57

Pittsburgh—Strip demand is unchanged. Orders from some automotive interests are slightly improved but total business has fallen below expectations. Producers look for better releases for automotive purposes over the next several weeks with little change anticipated in requirements of other consumers. Prices are steady at 1.50c to 1.55c for wide hot strip and 1.60c to 1.65c for narrow material although business is too light to provide a thorough test. Cold-rolled strip continues 2.05c to 2.15c. Mill operations continue at 20 to 25 per cent.

New York—Weakness in some midwest districts has not been reflected to an appreciable extent in strip here. Hot-rolled strip continues 1.55c and 1.65c, Pittsburgh; and cold-rolled strip 2.15c. Little tonnage is moving, however.

Philadelphia—Prices of strip are untested at 1.55c to 1.65c, Pittsburgh, for hot-rolled and 2.15c, Pittsburgh, for cold-rolled.

Cleveland—Within the last week hot-rolled strip purchasers have been heard from in increased number, orders covering some automotive work just beginning to come through. Prices for wide and narrow widths are still 1.55c and 1.65c, Pittsburgh, by some; on the other hand $1 a ton lower is fairly general to larger buyers. In cold-rolled 2.25c, Cleveland base, attempted for some time on less-carload orders, has now disappeared, 2.15c is the general market, with the usual concessions. Price policy of a Mahoning valley independent in selling below the market on cold-rolled has abated somewhat.

Chicago—Hot-rolled strip orders continue to improve, due to automotive releases. Concessions of $1 a ton are said to apply to large buyers. Otherwise quotations are given as 1.65c, Chicago, for wider strip, and 1.75c for material under 6 inches.

Operations Improve a Shade—Now Average 31

Youngstown, O.—Steel ingot production increased six points last week to 37 per cent of capacity as of Nov. 14, due to greater activity at the Sheet & Tube and Republic plants. Operations this week are expected to continue near that level with narrow swings in the district average as the rate of incoming business varies from day to day. Through this week 24 of 66 open hearths are expected to melt, though the number may increase if an independent carries out a tentative plan.

Philadelphia—Steelworks' engagement was at 28-29 per cent for this district's mills as of Nov. 14, off ½ point from last week. No change is expected this week.

Pittsburgh—Ingot production held at 30 per cent during the past week. No improvement is in prospect for the current week, with a slight decline a possibility. Blast furnace schedules have been reduced by the blowing out of one stack leaving 10 steelworks furnaces active of 54. Finishing mill operations are steady with tin plate and sheets continuing 45 and 25 per cent, respectively. Strip holds at 20 to 25, with pipe 25.

	Per Cent
Operations, week ended Nov. 14	**31**
Operations, week ended Nov. 7	**30-31**
Operations, week ended Oct. 31	**28**
Operations, this week, 1930	**44**
High for 1931 (March 19)	**57**
Low for 1931 (Oct. 24)	**27**

Buffalo—Operations will increase about eight points this week to approximately 35 per cent capacity. There is strong hope that approximately a 35 per cent rate may be maintained for the next three or four weeks barring holiday shutdowns, instead of the alternate recessions which for more than two months have caused unusual fluctuation in output of ingots here. It is expected 13 open hearths of 37 will operate this week.

Chicago—Ingot production this week is 25.5 per cent, representing a slight gain from last week. The Joliet steelworks furnace, banked last week, will be resumed this week, and may alternate on weekly production schedules for some time. Finishing mill operations remain at about 25 to 28 per cent.

Cleveland—The district's steel operations last week were the highest since early June, and of 34 open hearths at four plants, 15 were active. This is at 44 per cent of capacity, up six points. Operations this week will continue at the 44 per cent level. Otis Steel has five open hearths active at Riverside; Steel & Wire, 4; and McKinney, 6 furnaces on. Otis' sheet and strip mills are assured steady operations for the next two weeks.

Birmingham, Ala.—Based on ingot production, operations have slipped back three points, down to 27 per cent capacity this week. Gulf States Steel has none of its six open hearths in operation and Tennessee Coal, Iron & Railroad Co. has five of 17 at Fairfield and Ensley on.

Warehouse Improvement Not Marked in November

Warehouse Prices, Page 79

New York—Warehouse prices are inclined to be easy. Volume is unchanged, the slight increase noted earlier in the fall being barely maintained. Orders, while fairly numerous, are generally for small lots.

Detroit—Demand is improving at a rate only slightly ahead of that during October. Individual orders still are small. Listed quotations are unchanged.

Philadelphia—Indications point to a small decline in warehouse trading this month. Prices are unchanged.

Pittsburgh—Sales are well maintained but show little improvement. Outlook is favorable for steady demand. Prices are unchanged.

Cleveland—Cold-finished steels to makers of domestic equipment, mild steel bars, cold-rolled strip and sheet "seconds" have shown a buying revival in the past few days, but all in much less than full truckloads. Quotations generally are unchanged.

Cincinnati — Jobbers show little confidence in any decided improvement before the new year. Light individual orders rule. Quotations are unchanged.

St. Louis—Distribution of steel by warehouse interests has failed to expand since the first of the month. Aside from road consruction work and similar activities, less than the usual seasonal activity exists.

Steelworks for Montana?

Carl J. Trauerman, mining engineer, Butte, Mont., and Milton R. Wise, reported to be backing construction of a steel plant at Lewiston, Mont., last month were in Colorado ascertaining the cost of coking coal.

Concrete Bars Placed

(*Concluded from Page* 61)

373, to Buffalo Steel Co., Tonawanda, N. Y., through E. H. Latham Co., Columbus, O., contractor.
321 tons, highway work, Santa Barbara county, Calif., to unnamed interest.
280 tons, subway, Governor's square, Boston, to Truscon Steel Co., Youngstown, O.
250 tons, Illinois road work, to unstated.
250 tons, highway, Whippany to route 5, N. J., to Truscon Steel Co., Youngstown, O., through William Eisenberg & Sons Inc., Camden, N. J., contractor.
240 tons, masonry piers, Triboro bridge, New York, to unstated; Rogers & Hagerty Co., contractors.
236 tons, Lincoln viaduct, San Francisco, to Gunn, Carle & Co., San Francisco.
225 tons, high school gymnasium, Galveston, Tex., to Black Hardware Co., Galveston, Tex.; M. C. Bowden, contractor.
225 tons, garage, Newark, N. J., to Igoe Bros., Newark; D. J. Cronin Co., contractor.
200 tons, school, Newark, N. J., to Truscon Steel Co., Youngstown, O.
170 tons, two bridges over San Juan creek, San Benito county, Calif., to unnamed interest; G. J. Ulrich Co., Modesto, Calif., contractor.
160 tons, Thirtieth street terminal, Pennsylvania railroad, to Joseph T. Ryerson & Son Inc., Chicago.
144 tons, clinical building, veterans' hospital, North Little Rock, Ark., to Capital Steel Co., Little Rock, Ark., through William Peterson, Little Rock, contractor.
121 tons, court house, Graham, Tex., to North Texas Iron & Steel Co., Fort Worth, Tex.
120 tons, bridge, Davenport Center, N. Y., to Kalman Steel Corp., Bethlehem, Pa.; 35 tons structurals to Lackawanna Steel Construction Co., Buffalo; Robert E. Tompkins, Rochester, N. Y., contractor.
120 tons, highway, Grand Central parkway, Queens, N. Y., to Tidewater Steel Co., Hagerstown, Md., through Intercounty Construction Co.
100 tons, bridges, Comanche creek, Pecos county, Tex., to Central Texas Iron Works, Waco, Tex.

Contracts Pending

750 tons, home for delinquent children, Springfield, Mo., bids Nov. 19.
500 tons, sewage disposal works, Ft. Wayne, Ind.; general contract to Max Irmscher & Son, Ft. Wayne.
500 tons, dam, Mississippi river, Alma, Wis.
300 tons, sewage disposal plant, Ventnor, N. J.
200 tons, exchange building for Illinois Bell Telephone Co., West Monroe street, Chicago; bids Nov. 20. Holabird & Root, architects.
265 tons, 13 small bridge projects, various counties, O., for Ohio state department of highways; O. W. Merrell, director, Columbus, O.; bids opened Nov. 17.
200 tons, Pennsylvania railroad work in New Jersey; Vare Construction Co., Philadelphia, to close shortly.
173 tons, highway work, Santa Barbara county, Calif.; bids Nov. 25.
100 tons, Rock creek public sewer, St. Louis; Riley Contracting Co., St. Louis, contractor.
100 tons, Kress store, Bakersfield, Calif.; bids being taken.
Unstated tonnage, sewage plant, Coatesville, Pa.; Remington, Vosbury & Goff, Camden, N. J., open bids Nov. 24.

Pipe

Western Line May Take 52,500 Tons of 10-Inch—Cast Prices Are Lower in East

PIPE PRICES, PAGE 79

Chicago—A Standard Oil Co. subsidiary is planning to build a 700-mile 10-inch line from the Oklahoma fields to Woods River, Ill., near here. Several fresh municipal cast pipe orders are appearing. Much work is being delayed by the slow market for municipal and special assessment bonds. Barberton, O., is readvertising for 1300 tons of 24-inch cast, original bids having been rejected last August. Chicago delivered quotations for 6 to 24-inch sizes are nominal at $40 to $43. Much utility work is on the books of pipe foundries, against which no specifications are likely this year.

New York—Cast pipe prices are down with close to $27, delivered, on cement lined noted in several recent contractors' lettings. With freight and extras for lining, this figures back to a low base at foundry. Department of purchase takes bids on 360 tons this week and jobs about to come out for Queens will take several thousand tons, including 1500 tons of 30-inch. Several jobs at Westchester were due to be placed. Action on 1000 tons for West Nyack, N. Y., has been delayed until spring.

Merchant steel pipe resale market is again unsettled, up to 65 off list being offered by jobbers.

Boston—Cast pipe is active for this period, Meriden, Conn., buying close to 1000 tons of 6-inch. Small-lot volume has also been promising. Prices are easy. About 600 tons for the metropolitan sewage district have been awarded. The New England foundry is operating at full schedule. About 300 tons for subway has been awarded.

Pittsburgh—Pipe demand shows little change, business in nearly all descriptions continuing at the recent quiet rate. Automotive orders for mechanical tubing are slightly heavier but standard pipe business is dull. Oil country goods are moving slowly while boiler tube demand is steady. Pipe mill operations hold around 25 per cent.

Birmingham, Ala. — Production continues on 40 per cent capacity, with shipments steady on lettings of the past several weeks. But little stock of standard sizes is being carried on shop yards.

Steel Pipe Placed

23,700 tons, 100 miles 20-inch, for unstated, to National Tube Co., Pittsburgh, to be produced at Lorain, O., works.
8250 tons, Corral Hollow pipe line, Hetch Hetchy water project, San Francisco, to Western Pipe & Steel Co., San Francisco.
485 tons, 16¾ miles 4-inch line pipe, for Continental Oil Co. line from Greasewood Flats field, Colo., to Union Pacific railroad at Hardin, Colo., to National Tube Co., Pittsburgh, through Gordon Construction Co.

Cast Pipe Placed

925 tons, 6-inch, Meriden, Conn., to Warren Foundry & Pipe Co., New England foundry.
600 tons, various sizes, Metropolitan sewage district, Boston, to Warren Foundry & Pipe Co., Phillipsburg, N. J.
500 tons, 12-inch, Carlisle Springs, Pa., to United States Pipe & Foundry Co., East Burlington, N. J.
430 tons, 6 to 10-inch, Glenville Water District, Greenburgh, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.
425 tons, 12-inch, Manhattan (New York) to Warren Foundry & Pipe Co., Phillipsburg, N. J.; Beaver Engineering Co., contractor.
300 tons, 6 and 8-inch, subway, Boston, to United States Pipe & Foundry Co., East Burlington, N. J.; Silas Mason Co., contractor.
190 tons, 30-inch, Lawrence, Mass., to unstated foundry.
165 tons, mostly 16-inch, Ocean Beach, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J.
159 tons, 2 to 8-inch class 150, Mesa, Ariz.; general contract to Arizona Concrete Co.
155 tons, castings and fittings, Boston, to Mechanics Iron Foundry, Boston; 75 tons steel pipe to National Tube Co., Pittsburgh, through Underground Steam Construction Co.

Cast Pipe Pending

1300 tons, 24-inch, Barberton, O.; readvertised.
800 tons, 20 and 24-inch, Syracuse, N. Y.
400 tons, 8 to 12-inch, Dearborn, Mich.; bids Nov. 17.
375 tons, 4 to 12-inch, for Panama canal, American Cast Iron Pipe Co., Birmingham, Ala., low on alternate.
360 tons, 4 to 12-inch, and valve box castings, department water supply, gas and electricity, New York; bids Nov. 18, department of purchase letting.

-AMERICAN-

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COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPB'LDG. & DRY DOCK CO.
ILLINOIS STEEL COMPANY
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Ross Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

350 tons, 8-inch, Dearborn, Mich.; bids in.
125 tons, 4 and 6-inch class 150, Brea, Calif.; bids Dec. 2.
100 tons, 6 and 8-inch, Niagara Falls, N. Y.
Unstated tonnage, 33,000 feet, 2 to 6-inch, wrought iron or steel, for Panama, United States Steel Products Co., low $8602.80.

Steel Pipe Pending

52,500 tons, 10-inch line, 700 miles from Oklahoma to Woods River, Ill., near Chicago, for a Standard Oil subsidiary. Expected to mature shortly.
150 tons, 280 15-foot pieces, 18-inch I. D. steel pipe, United States engineer, Memphis, Tenn.; bids Nov. 17.
Unstated tonnage, 280 sections, 18-inch i.d. welded shore pipe, United States engineer, Memphis; bids Nov. 17.

Iron Ore from North Africa Reduced in Price

Iron Ore Prices, Page 68

New York—Spanish North African basic and foundry iron ores, 50 to 60 per cent iron, have been offered at 7.00c per unit alongside dock, Atlantic seaboard. The usual prices now are 7.00c to 8.50c, instead of 8.50c to 9.00c. The new prices are the lowest offered in years. Other foreign iron ores are nominally unchanged pending a revival of consumers' interest.

Cleveland—Iron ore on Lake Erie docks Nov. 1, amounting to 6,079,512 tons, was 262,096 tons less than Nov. 1 last year, according to the following statement of the season's receipts, shipments from, and dock balances, by the Lake Superior Iron Ore association:

	Receipts	Shipments	Dock balance Nov. 1, 1931
Buffalo	1,157,359	15,513	2,758
Erie	556,236	500,279	119,162
Conneaut	3,571,960	3,410,083	1,967,487
Ashtabula	1,789,104	1,712,737	2,101,148
Fairport	944,048	897,648	449,117
Cleveland	3,348,937	2,362,000	982,607
Lorain	1,763,262	887,717	118,696
Huron	427,102	427,613	321,796
Toledo	741,141	486,036	16,741
Total	14,299,149	10,699,626	6,079,512
Comparative 1 year ago	30,251,436	22,044,968	6,341,608

Receipts for the season at other than Lake Erie ports follow:

	Tons
Detroit	774,982
Indiana Harbor	1,189,779
Gary	2,424,534
Chicago-local furnaces	3,174,069
Chicago-interior furnaces	175,880
Sault Ste. Marie, Ont.	187,139
Hamilton, Ont.	258,372
Total	8,184,755
Comparative 1 year ago	13,345,485

Wire

Quiet Demand Continues with Jobbers Meeting Needs from Stocks—Prices Hold Steady

WIRE PRICES, PAGE 57

Chicago—Western wire mills are awaiting orders to materialize from improved farm sentiment resulting from higher grain and livestock prices. Already dealers' sales have moderately increased, although jobbers still are selling from stocks without replenishment of importance. Prices are nominal at $1.95, Chicago or western mills, for wire nails to jobbers, and 2.25c for plain wire. November sales of merchant and manufacturers' wire are running slightly ahead of October.

Worcester, Mass.—Discounting a midweek holiday shutdown, wire production continued its slight upward trend, filling a slightly increased demand for products in many lines. Prices are constant at 2.30c, base, Worcester.

Buffalo—Demand for wire products is showing its usual seasonal decline and operations are down to 50 per cent of open-hearth capacity. Stocking of mesh and poultry netting is expected to get under way shortly.

Pittsburgh—Wire demand is steady, with new business from jobbers light as a result of a moderate excess in stocks on hand. Demand for manufacturers' wire is quiet and fails to reflect improvement in automotive schedules. The market is well maintained at $1.90 to jobbers for wire nails and 2.20c for plain wire.

Cleveland — A more encouraging note in the country wire goods' market was noted last week with entry of several carloads of fencing and other materials on mill books for delivery into first quarter and later. However, most spot wire and nail sales are extremely slow. Some increase in bolt and nut makers' wire specifications last week was noted, mainly due to a large release from Chevrolet and a smaller one from Buick. Plain manufacturers' wire is quoted 2.20c; wire rods are $35 a ton. Nails are apparently held at $1.90, minimum, per keg.

Bolts, Nuts, Rivets Show Some Steady Gains

Bolts, Nuts, Rivets Prices, Page 57

Pittsburgh—Little change is noted in specifications for bolts, nuts and rivets and improvement in orders since a month ago has been only slight. Orders are entirely for early requirements and for small lots. Prices usually continue 75 and 10 off for bolts and nuts and 2.25c for rivets.

New York—Although bolts and nuts at 73 and 10 off list are easy, demand continues to gain slightly. Approximately 450 tons of tunnel bolts for the Pennsylvania railroad development in Baltimore, previously noted, are expected to be placed this week. Allen N. Spooner & Sons Co. is closing on 100 tons for one municipal pier job here and is low on another pier project, pier No. 45, involving approximately 75 tons. Small bolts are generally 80 and 10 off list. Rivets are unchanged at 2.25c, Pittsburgh.

Philadelphia—Softness in the bolt and nut market has brought quotations of 73, 10 and 10 off in some cases. Rivets are firm at 2.25c, Pittsburgh.

Cleveland — Inasmuch as October was the lowest in point of monthly specifications for bolts and nuts, the sustained pickup thus far in November has brought better sentiment among producers. A recent good-sized specification from Chevrolet was received by a local bolt plant, and Ford purchased several sizes recently after absence of almost a year. Rural implement buying is expected and some railroad buying has aided large rivets. The quotation of 73 and 10 off is observed on present bolt and nut contracts.

Chicago—Lower discounts are encountered more frequently on bolts and nuts. Additional discounts of 73, 10 and 10 are being named, but 73 and 10 off is the general quotation in this market. November specifications probably are slightly under October, but will not be as low as September, which apparently marked the low point of the year.

Colorado Rich in Minerals

Colorado has more diversified mineral resources than any other state in the union, declared Dr. M. F. Coolbaugh, president, Colorado School of Mines, Golden, Colo., in a recent address. Tungsten, molybdenum, vanadium, manganese, silver, lead, zinc iron ore and radium were listed as being "in abundance" in Colorado.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.00
Pittsburgh, dist. fur.	17.00
Pittsburgh, delivered	17.63 to 18.13
Valley furnace	16.00 to 16.50
Cleveland fur., local del.	17.00
Philadelphia, delivered	15.51 to 16.01
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.15 to 19.65
Buff., all-rail, Newark	17.53 to 18.03
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.00 to 16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	19.65 to 20.15
Buffalo, all-rail Newark	18.03 to 18.53
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	16.01to 16.51

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	16.51 to 17.01

MALLEABLE

Valley furnace	16.50
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.00
Pittsburgh, delivered	17.63 to 18.13
Chicago, furnace	17.00
Buffalo fur., local del.	17.50
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Eastern Penn., del.	16.00 to 16.50
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	23.50
Valley, furnace	15.00 to 15.50

BESSEMER

Valley furnace	16.50
Pittsburgh, delivered	17.63 to 18.13
Pittsburgh, furnace	17.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	16.00
Pittsburgh district fur.	16.50
Pittsburgh, delivered	17.13 to 17.63

CHARCOAL

Lake Superior, del. Chi.	25.04

SILVERY

Jackson County, O., fur. in per cents: 6—$19; 7—$19.50; 8—$19.00 to $21.00; 9—$20.50; 10—$21; 11—$22; 12—$23; 13—$25.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.35 to 2.40
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	10.00
North African low phos.	8.50
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to 11.80
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 cents
South African, 52%	24 to 26 cents
South African, 49-51%	23 to 24 cents
South African, 44-47%	22.50 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$40.00
Missouri	37.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 35.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2¼	$65.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$45.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con. del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.40
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant.
*To users of carloads to 500 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.00
Washed gravel, import duty paid east, tide, gross ton	18.50

A New Service for Steel Users

ILLINOIS SCULLY STEEL WAREHOUSE COMPANY

Subsidiary of United States Steel Corporation

A Consolidation of

Illinois Steel Warehouse Company
and
Scully Steel and Iron Company

Former management of the two companies will be retained in the new organization. All Chicago warehouse stock will be consolidated at 1319 Wabansia Avenue where additional warehouse space will accommodate a greater variety of light and heavy rolled steel products, specialties and machinery.

General Offices and Warehouse
1319 Wabansia Avenue
Chicago

Warehouses
Chicago · St. Paul · St. Louis

Pig Iron

Market Activity Expands Moderately—Shipments Gaining—Second Toledo Stack Banked

PIG IRON PRICES, PAGE 68

Pittsburgh—Pig iron activity is little changed in new business and shipments. Requirements of foundries are light. Although slightly improved since September, they show little additional gain over the past several weeks. New orders are small and only for immediate needs. Inquiry is lacking. Prices are fairly steady at $16.50, valley, for bessemer and malleable, $15 for basic, and $16 to $16.50 for No. 2 foundry.

Boston—Although not tested by large inquiries, pig iron prices are steadier. Sales last week totaled about 1200 tons, including one lot of 200 tons of Buffalo iron, reported at $19.91, delivered. The New England furnace sold several hundred tons close to $17. Closing of barge shipments, now at hand, and more interest on the part of small melters has had a steadying influence. Southern iron is $11, Birmingham, and Indian iron is $18.50 to $19, dock.

New York—Competition has resulted in a further reduction on iron from Buffalo, which is off 25 cents a ton to $14.25 to $14.75, base, furnace. About 3000 tons of domestic pig iron was sold here in the past week. The Worthington Pump & Machinery Corp. has awarded 100 tons of foundry iron for Holyoke, Mass., and is inquiring for 300 tons of foundry and 100 tons of bessemer iron for Harrison, N. J.

Three thousand tons of Royal Dutch iron has been placed here, part for shipment to Pennsylvania and part to Massachusetts. This is the largest movement of this iron in some time.

Buffalo—Inquiry for pig iron continues slow and limited to small lots. Buffalo producers are finding difficulty in meeting eastern competition in that region. Last barge canal shipments of iron have gone forward.

Philadelphia—Although far from active, pig iron business is the best in several weeks. Domestic prices are unchanged, eastern Pennsylvania iron being $14.75 to $15.25, base, furnace. These prices are slightly stronger than a week ago. English low phosphorus iron is easier at $17.50, duty paid, Philadelphia, without attracting orders. Basic is untested at $16 to $16.50, delivered, eastern Pennsylvania.

Youngstown, O.—Orders continue small. Competition from outside stacks is keen enough to maintain selling interest at neutral points. Shipments are fair. Quotations are steady at $16.50, valley, for bessemer and malleable; $15 to $15.50 for standard basic; $16 to $16.50 for No. 2 foundry; $15.50 to $16 for No. 3 and gray forge; and $27 for copper-free low-phosphorus.

One district blast furnace is slated for early banking, but another may be in blast shortly.

Cleveland—Pig iron shipments thus far this month are on approximately the same basis as in October, though it is expected November as a whole will make a better record than that of last month. Buying still is moderate, and for only a few weeks in advance. Sales by furnace interests here totaled 3500 tons in the past week, slightly less than in the week preceding. Inquiries are a little more numerous. The second stack at Toledo, O., has been banked, no furnace operating there. Usual prices for delivery in competitive territories are $15.50 to $16, base, lake furnace. The nominal price in Cleveland is $17, base, furnace, but the market here is untested.

Cincinnati—Melters continue to take pig iron close to requirements. Inventories are low and rush shipments are frequent. Inquiry is better on small lots, with 100-ton orders making up the bulk of a 1300-ton week in this market. The melt has become perceptibly better, with little help from the machine tool field at Cincinnati. Northern furnace prices continue weak.

Chicago—Further weakness is noted in the charcoal iron price of $25.04, delivered Chicago. Northern merchant iron is $17, base, Chicago furnace. More than ten prospective buyers of 1000 tons or more have become active in the market. Releases for automotive accounts have picked up, and shipments of southern iron are somewhat heavier. A northern Illinois melter's first quarter requirements, specifying in part higher silicon, may cover 1000 tons. November shipments are gaining over October.

About 3500 tons of pig iron will be shipped here from Cleveland before navigation closes.

St. Louis—New buying continues in small volume, mainly for prompt shipments. Sales during the past week amounted to less than 800 tons. Some inquiries for first quarter are noted. Several implement makers plan to resume production in a few days, chiefly to build up stocks. Prices are steady.

Birmingham, Ala. — Melters continue to buy small lots, and the aggregate does not exceed the output of iron. Six furnaces are operating, at a reduced rate, 40 per cent under that a year ago. The base price is holding at $12 for local delivery, and $11 for shipment to outside districts.

Toronto, Ont.—Demand for merchant pig iron, and production, are at the low point for the year. Not more than 300 tons of iron was sold in this market in the week.

Ferromanganese Moving In Larger Volume

Ferroalloy Prices, Page 68

New York—Chief interest in the ferromanganese market now lies in prices for next year, the usual contracting period being closer at hand. Sellers have given no intimation as to what figure will be named. Meanwhile, $85, duty paid, for material in carlots prevails. As a result of slightly better steelmaking operations, specifications are slightly better. Domestic spiegeleisen, 19 to 21 per cent, is steady at $30, furnace, and foreign spiegeleisen, 26 to 28 per cent, nominal at $31.50, duty paid. Little new inquiry has developed to test the market.

Demand continues to increase for the low carbon and high carbon chromes for use in alloy steel for the automobile industry. The market is spotty, but sellers are encouraged by the better sentiment. Fair orders have been booked for ferrophosphorus. Prices of special ferroalloys are unchanged.

Pittsburgh—Ferroalloy shipments continue in small lots and show little change in the total movement. Less than the usual seasonal decrease is looked for over the remainder of the year. Ferromanganese continues $89.79, delivered, in the spot market with little business appearing. Producers have made no announcement regarding the price for the first half of 1932. Quotations on other ferroalloys are unchanged.

Chicago—Ferroalloy shipments are slightly below the October rate. A mixed cargo of spiegeleisen and low phosphorus iron is enroute here from Buffalo.

Average capacity of freight cars in the United States has increased from 36.9 tons in 1911 to 46.6 tons in 1930, 26 per cent.

Scrap

Light Demand and Heavy Stocks Cause Conditions to Hold —Some Minor Grades Decline

Chicago—Buyers of iron and steel scrap who have been out of the market for some time are showing interest in negotiating for material at the existing low market. The heavy melting steel range of $7.75 to $8.25 has become more stabilized because of the purchase by the large Gary melter of over 5000 tons at the top of the spread. Postponement of the effective date of the increased freight charges in the Chicago switching district until Dec. 10 gives promise of an adjustment with the carriers of the increases authorized.

An acute shortage is developing in some railroad specialties.

Boston—Scrap shipments are light. Cast grades are dull, with reported offers to shade stimulating little busi-

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 8.50
Boston, dealers	4.50 to 5.00
Buffalo, No. 1	8.50 to 9.00
Buffalo, No. 2	7.00 to 7.50
Chicago	7.75 to 8.25
Cinci., deal.	7.25 to 7.75
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	6.00 to 6.50
Det., No. 2 deal.	4.50 to 5.00
E. Pa. del. mill	7.50 to 8.50
N. Y. deal. R. R.	4.50 to 5.75
N. Y. deal. No. 2	3.00 to 3.25
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	8.00 to 8.20
Federal, Ill.	7.00 to 7.50
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	9.25 to 9.75

COMPRESSED SHEETS

Buffalo, dealers	7.00 to 7.50
Chi. (Factory)	6.50 to 7.00
Cleveland	7.00 to 7.25
Detroit, dealers	6.00 to 6.50
E. Pa. new mat.	7.00 to 8.00
Pittsburgh	9.75 to 10.25
Valleys	8.75 to 9.25

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cinci., deal.	6.75 to 7.25
Cleveland	6.00 to 6.50
Eastern Pa.	6.00 to 6.50
Pittsburgh	9.00 to 9.50
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.00 to 4.50
Detroit, dealers	3.50 to 4.00
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	11.00 to 12.00
Boston, dealers	4.25 to 4.75
Buffalo	12.00 to 12.50
Chicago (3 ft.)	8.75 to 9.25
Chicago (2 ft.)	9.25 to 9.75
Cinci., deal.	12.00 to 12.50
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, con.	4.50 to 5.00
Buffalo	8.50 to 8.75
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	9.00 to 9.50
Eastern Pa.	10.50 to 11.00
Pittsburgh	11.00 to 11.50
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	8.75 to 9.25
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.00 to 12.50
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	12.00 to 13.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts. sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	8.00 to 8.50
St. Louis	8.50 to 9.00

SHOVELING STEEL

Chicago	7.75 to 8.25
Cleveland	6.25 to 6.50
St. Louis	7.00 to 7.50

RAILROAD WROUGHT

Birmingham	7.00 to 8.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	8.00 to 8.40
Chicago, No. 2	7.75 to 8.25
Cinci., No. 2	7.25 to 7.75
Eastern Pa.	9.50
N. Y., No. 1, deal.	7.00 to 7.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	7.00 to 7.50

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	9.50 to 10.00
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	7.00 to 7.50
Chicago, No. 1	6.50 to 7.00
Cinn., No. 1 dl.	5.50 to 6.00
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	5.75 to 6.00
Det., No. 1 new deal.	5.00 to 5.50
St. L., No. 1	6.00 to 6.50
Val. new No. 1	8.75 to 9.25

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.50 to 1.75
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	5.00 to 5.50
Detroit	3.50 to 4.00
Eastern Pa.	5.00 to 5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.00 to 7.50
St. Louis	3.00 to 3.50
Valleys	6.75 to 7.25

BORINGS AND TURNINGS For Blast Furnace Use

Boston	1.50 to 1.75
Buffalo	6.50 to 7.00
Cinn., deal.	3.75 to 4.25
Cleveland	5.75 to 6.25
Detroit, deal.	4.50 to 5.00
Eastern Pa.	5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.00 to 7.50

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	6.50 to 7.25
Boston, deal.	1.50 to 1.75
Buffalo	6.00 to 6.50
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	5.75 to 6.25
Detroit, deal.	4.50 to 5.00
Eastern Pa.	3.50
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.00 to 7.50
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.00 to 5.50
Eastern Pa.	7.50
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.00 to 7.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, del.	2.00 to 2.25
Chicago	10.50 to 11.00
Eastern Pa., del.	7.00 to 8.00

ARCH BARS, TRANSOMS

Chicago, net	8.50 to 9.00
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	6.50 to 7.00
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00
Pittsburgh	9.25 to 9.75
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	12.00 to 12.50
Chicago	12.90 to 13.45
Eastern Pa.	16.00 to 17.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	8.40 to 8.95
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	14.00 to 15.00

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	12.50 to 13.50
Buffalo, iron	10.00 to 10.50
Buffalo, steel	10.50 to 11.00
Chicago, iron	9.00 to 9.50
Chi. rolled steel	9.00 to 9.50
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	10.00 to 10.50
E. Pa. iron	11.00 to 11.50
Pitts. iron	10.00 to 10.50
Pitts., steel	11.00 to 11.50
St. Louis, iron	7.00 to 7.50
St. Louis, steel	8.50 to 9.00

NO. 1 CAST SCRAP

Birmingham	9.00 to 9.50
Buffalo (mach.)	10.25 to 10.75
Boston, textile	7.00 to 8.50
Chicago, mach.	9.00 to 9.50
Chi., railroad	8.10 to 8.70
Chicago, agri.	7.60 to 8.10
Cinn., mach. cup., gross	11.00 to 11.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa., cupola	11.50
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	8.50 to 9.00
St. L. No. 1	7.50 to 8.00

HEAVY CAST

Boston	10.00 to 10.50
Bos. mach. cast	10.00 to 11.00
Buffalo, break	6.75 to 7.25
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.00 to 5.50
Eastern Pa.	9.50
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	12.50 to 13.00
Buffalo	10.00 to 10.50
Chicago, agri.	7.50 to 8.00
Chicago, R. R.	8.00 to 8.50
Cinci., R. R. del.	9.25 to 9.75
Cinci., agri. del.	9.00 to 9.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.50 to 10.00
St. Louis, rail	6.00 to 6.50

RAILS FOR ROLLING 5 feet and over

Birmingham	10.00 to 10.50
Boston	6.00 to 7.00
Buffalo	10.00 to 10.50
Chicago	10.00 to 10.50
Eastern Pa.	11.50 to 12.00
New York	6.25 to 6.75
St. Louis	10.00 to 10.50

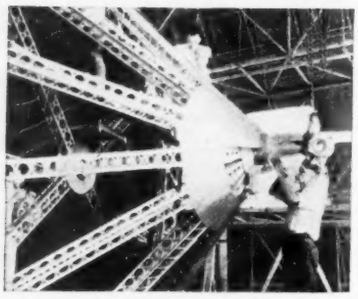
LOCOMOTIVE TIRES

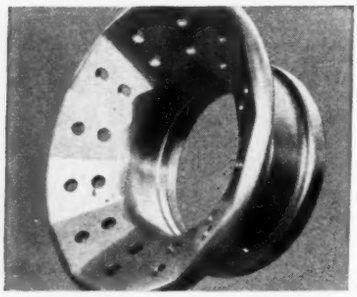
Chicago, cut	10.50 to 11.00
St. L., No. 1	9.00 to 9.50

LOW PHOS. PUNCHINGS

Chicago	11.25 to 11.75
Buffalo	12.00 to 12.50
Eastern Pa.	13.00
Pittsburgh	13.00 to 13.50

THE WORLD'S LARGEST AIRSHIP—U. S. S. AKRON TIES UP TO MIDVALE





When the largest airship ever built—785 feet long, 146½ feet high—comes to rest, you can imagine the terrific tug on its mooring cone. Goodyear zeppelin engineers, navy engineers, must have checked pretty carefully the unusual stress for which they should allow,—have studied and restudied the design, the materials from which this mooring cone should be built.

Midvale was chosen. Further, Midvale not only met, but far exceeded, the specifications. To a user of steel for unusual requirements these figures from the test bars may be interesting:

Tensile Strength	Yield Point	Extension in 2″	Reduction of Area
180,000 lbs.	172,000 lbs.	13.5%	47.2%
184,500 lbs.	169,000 lbs.	14.5%	46.2%

Midvale is accustomed to making steel for unusual conditions—perhaps such conditions confront you. If so, we welcome an opportunity to study your requirements and make recommendations. Simply call on The Midvale Company at its nearest office—Philadelphia, New York, Pittsburgh, Washington, Cleveland, Chicago and San Francisco.

ness. For outside shipments heavy breakable cast is $4.60 to $5.10. Heavy melting steel continues nominally $7 to central Massachusetts and $8 Bridgeport. Some barge scrap from New York is reported bought under that price at the latter point.

New York—Scrap shipments are light and prices barely holding. Breakable cast for Florence, N. J., is $9, delivered, with Harrisburg paying $9.50. The former foundry is reported to be taking some short steel scrap at $8. Yard steel is $6.50, Pheonixville, Pa. Some No. 1 scrap is being purchased at $5.50 to be stored on barge for spring shipment to the Buffalo district. A small tonnage of No. 1 steel was bought at $4.50 for Coatesville, Pa.

Philadelphia—Continued dullness has forced further reductions in steel and iron scrap. In expectations of shutting down its blast furnace at Swedeland, Pa., the Alan Wood Steel Co. has suspended shipments of borings and turnings which now are nominally $3.50, delivered. The leading consumer at Phoenixville, Pa., is taking a limited tonnage against contracts while the Coatesville, Pa., mill is taking cast scrap, but refusing melting steel.

Buffalo—Bethlehem's new offer of $8.50 for No. 1 heavy melting steel is being ignored by dealers who claim it is impossible to do business on this basis, which also cuts No. 2 steel to $7. Orders are expected to be cleaned up with the lifting of embargoes on shipments, in effect until today.

Pittsburgh—The scrap market is steady as to demand and prices. A fair number of small orders for steelmaking grades have been placed recently and prices represent no change from former quotations. Most buying of heavy melting steel has been done at $10.25, although some tonnage was placed at $10.50 and sales of railroad heavy melting steel have brought slightly better than $10.50. Compressed sheets are slightly stronger at $10 to $10.25, with dealers not able to pick up much material at less than $10. The same holds true for heavy melting steel.

Cleveland—A local mill, it is expected, may release some blast furnace scrap by the end of the month. The price recession of 75 cents to $1 a ton a fortnight ago has not stirred added interest. Prices have not changed since then.

Cincinnati—Transactions in scrap iron and steel continue on a small-lot basis, with dealers marking time while awaiting an upturn in mill demand. Quotations are nominal on the basis of the only test available, bidding on scrap lists of railroads.

Detroit—Quoted prices are firm, but solely because of lack of demand and not market conditions. No. 2 heavy melting and heavy breakable cast have been marked down 50 cents each. It is becoming increasingly possible that iron and steel price quotations will be higher by Dec. 1.

Birmingham, Ala.—Little scrap is being melted, judging by purchases. Quotations, in addition to being low, are weak. Heavy melting steel prices are given at $8.50, for best quality.

St. Louis—Weakness and general lack of demand continue in scrap iron and steel. Mills are purchasing practically nothing, and the small requirements of foundries and other users are easily filled.

Toronto, Ont.—Business in the iron and steel scrap market is negligible. Mills are out of the market and there is little demand for heavy melting steel, turnings or other grades of steel scrap. Dealers have been shipping little scrap to the Hamilton district this quarter. Iron scrap also is sluggish. A few small orders appeared for machinery cast and stove plate and some odd cars for other lines. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Weights Institute To Meet

The American Institute of Weights and Measures will hold its annual meeting at its headquarters, 33 Rector street, New York, Dec. 2. W. E. Bullock is secretary.

Tin Products Inc., Chicago, has increased capital from 1500 shares to 2105 shares no par value.

Coke

Connellsville Furnace Grade Offered at $2.35—Foundry Demands Show Little Change

COKE PRICES, PAGE 68

New York—Beehive furnace coke prices have stiffened at $2 to $2.50 Connellsville, Pa., with little available at the lower figure. The upward tendency appears to be the result of further curtailment in production. Foundry operations in this district continue at approximately 25 per cent and standard beehive foundry coke is unchanged at $3 to $3.25, Connellsville. Premium brands are moving generally at $4.50, Latrobe, Pa. By-product coke is $8.70 to $9.10, Newark, N. J.; $10.50, New England.

Philadelphia — Standard beehive furnace coke is available at $2 to $2.25, Connellsville, Pa., for spot shipment. Little, if any, however, can be had under $2.50 on future contracts.

Pittsburgh — Seasonal improvement in beehive coke demand is restricted by mild weather, which is affecting sales of heating fuel. Foundry coke orders are small and unchanged while the spot market for furnace coke continues dull. Shipments of the latter remain low. Standard beehive furnace coke is easier at $2.35 to $2.40 for spot shipment. Foundry grades continue at $3.25 to $4.50.

Cincinnati—Shipments of by-product foundry coke continue on a slightly improved basis. Dealers in domestic coke report satisfactory sales. Quotations are unchanged.

Chicago—By-product foundry coke buyers are negotiating for first half requirements. The oven price is $7.50. Shipments of metallurgical coke are slightly ahead of October.

St. Louis—Steelworks and foundries are operating below 25 per cent and this is reflected in their coke requirements. Purchasing by public utilities is considerably below the seasonal average. Many consumers have large stocks.

Birmingham, Ala.—Coke requirements at foundries and other consuming plants are at low ebb. Production is at about 50 per cent of normal and producers have but little stock on hand.

Pacific Coast

Dull Conditions Continue and Public Projects Make Most of Activity — Seattle Fabricator Places Part of Airship Dock Steel in California—Small Lot Buying Is General Rule

San Francisco—(*By Air Mail*)—Although few new inquiries of importance came into the market this week, a number of projects were placed. Among these was the Corral Hollow pipe line for the Hetch Hetchy project, San Francisco, involving 8250 tons of plates, placed with the Western Pipe & Steel Co.

Building activity has shown no improvement, most of the work being federal, state and county projects. Were it not for these jobs the building industry would be at a low ebb.

Bars, Plates and Shapes

Awards of reinforcing steel bars were the lowest in over three weeks, close to 1000 tons. Bookings so far this year total 57,177 tons, compared with 56,949 tons for the corresponding period a year ago. Gunn, Carle & Co. secured 236 tons for the Lincoln viaduct, San Francisco. Unnamed interests were awarded 321 tons for highway work in Santa Barbara county, Calif., and 170 tons for two bridges in San Benito county, Calif. The only new inquiries of size call for 173 tons for highway work in Santa Barbara county and for 100 tons for the Kress store in Bakersfield, Calif. No change is noted in quotations on out-of stock material in the San Francisco and Los Angeles districts. In the former section 2.60c, base, on carload lots, is firm, while 2.50c, base, applies in the latter locality. Merchant bar steel demand is sluggish and 2.05c, c.i.f., is general.

Plate awards were the heaviest since last May and totaled over 8900 tons. The Berkeley Steel Construction Co. secured 782 tons for the Red Mountain Bar 114-inch siphon for the Hetch Hetchy project, San Francisco. The only pending inquiry of importance involves 1800 tons for six water tanks for Long Beach, Calif., bids on which have been opened. Plate prices range between 1.85c and 1.95c, c.i.f.

Several fair sized structural awards were placed, the weekly aggregate being the largest in over a month. Among the lettings were 675 tons for a mixing plant at Boulder City, Nev., for the Six Companies Inc., placed with the International Stacey Corp. The Wallace Bridge & Structural Steel Co., Seattle, which was awarded the 9000 tons Sunnyvale airport dock, has sublet 5000 tons to Bay district fabricators. The Pacific Coast Engineering Co. will handle 2500 tons and the Moore Drydock Co. an equal tonnage. Bids have been opened on 1200 tons for a gymnasium at Berkeley, Calif., for the University of California. Plain material continues to range between 2.05c and 2.15c c.i.f.

Other Finished Material

Only one cast iron pipe award of over 100 tons was reported. The Arizona Concrete Co., Phoenix, Ariz., secured the general contract for 159 tons of 2 to 8-inch pipe for Mesa, Ariz. Brea, Calif., will open bids Dec. 2 for 125 tons of 4 and 6-inch pipe.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Seattle Buys Small Lots

Seattle—Awards of steel and iron in the Pacific Northwest have been confined to lots of less than 100 tons. Several jobs of some importance are pending and will be let within a few days. Business sentiment has taken fresh courage and prospects are considered much improved. Construction is at low ebb but architects have received considerable new work and while their boards show only small projects, it is expected that more important construction will follow shortly. There is increased inquiry for steel in small lots.

After two months idleness Pacific Coast Steel Corp., has started two open-hearth furnaces at the local plant and is also operating one mill.

Bars, Plates and Shapes

Mill prices are not strong but unchanged at previous levels: Shapes, 2.05c; bars, 2.00c to 2.10c; plates, 1.90c; reinforcing bars, 2.30c.

Concrete bars are not in active demand, few tonnages are pending and recent awards have been in small lots. Pacific Coast Steel Corp. took 80 tons for a state bridge over the Skokomish river, Mason county, and a small tonnage for an office and factory for Williams & Co., Seattle. For the government hospital at American Lake, subcontract for 150 tons of steel is pending. Inquiry for plates is lacking and no projects of importance have developed.

General contracts for two steel bridges were awarded by the state last week. A span in Wenatchee county involves 700 tons of shapes and the second, in Mason county, 250 tons. A local plant is low bidder on steel fabrication, but subcontracts have not been placed. Wallace Bridge & Structural Steel Co. is to furnish 40 tons for a Seattle girder bridge. Approximately 80 tons for two machine shops for McNeil Island prison are pending, a Seattle plant being low. Seattle is considering steel approaches for the Ballard bridge, on which a hearing will be held Nov. 26.

Finished Materials

Seattle jobbers have advanced prices of sheets 25c, applying to sales of 500 pounds or more, 50c additional being asked for smaller orders. This increase was adopted to offset the expense of handling small lots and applies also in Portland territory, the revised price list being: Galvanized, 4.50c; black, 4.00c; blue 3.50c. Sheets are not active but there is a limited demand. Other items are moving slowly and the general turnover is showing no increase.

Cast Iron Pipe Dull

Few specifications are being received, recent business being in small lots. Municipal requirements for next year will not be up for figures until late next month. Port Townsend, Wash., has awarded the general contract for a water system extension but subcontract for 40 tons of cast iron pipe is pending. Grants Pass, Oreg., has awarded 50 tons to the Pacific States Pipe Co. Oakville, Wash., will open bids next week for a small supply.

Old Materials Weaker

If possible, the scrap market is weaker, there being practically no demand and shippers being anxious to turn their holdings into cash even at present low levels. Pacific Coast Steel Corp., with two open hearths operating, is buying only as much as is being consumed, no stock being accumulated. The top mill price for No. 1, both cast iron and steel, is $6 a gross ton. Threats of war in the Orient have not revived the demand of two years ago in Japan for steel scrap.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¼	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$33.00 to 35.00
Four-inch, Birmingham .... 37.00 to 39.00
Four-inch, Chicago ..... 43.00 to 46.00
Six to 24-inch, Chicago..... 40.00 to 43.00
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	3.50c
Phila.*† (e)	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	3.90c
Portland	4.50c
San Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c-4.25c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras. (d) Minus quant. diff. (e) New mill classif. ‡Domestic bars. *Plus quantity extras. **Less than 25 sheets. *†50 or more bundles.

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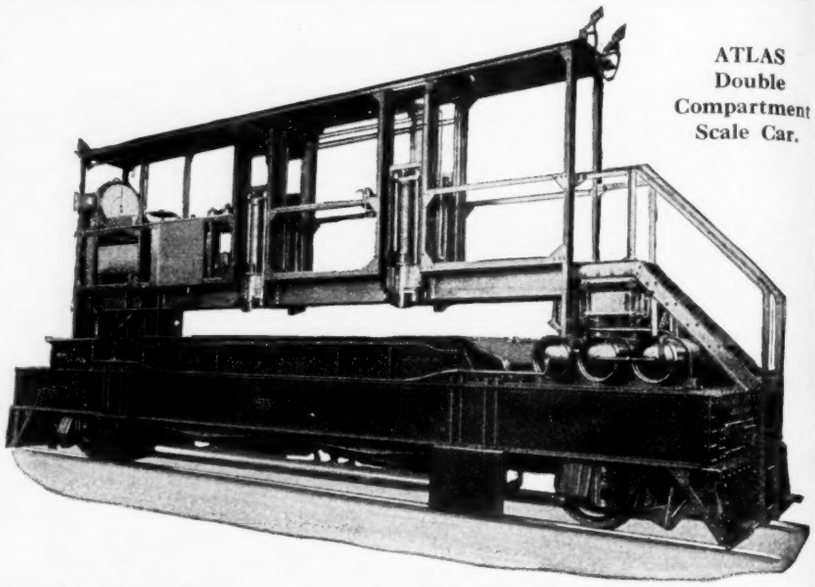

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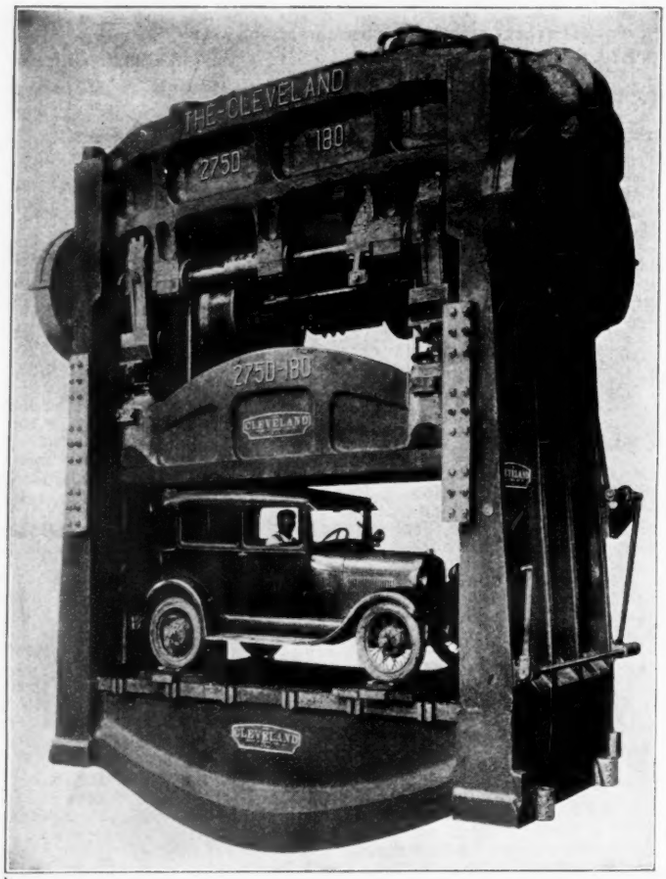

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—CAPACITY 600 TONS
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While this Cleveland 4-Point Suspension Press differs in many respects from other presses of similar type, one of the outstanding differences is the use of eight tie rods, instead of the usual 4, to combine the bed, crown and uprights into one complete unit. This feature coupled with the massive design of the bed, crown, uprights and other sections which are amply proportioned with a good factor of safety, is a positive guarantee of long life to the wearing parts as well as to the dies as the press will always remain in correct alignment.

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Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.25c, Conn., for copper

Sheets	
Yellow brass (high)	13.00
Copper, hot rolled	16.12½
Lead, full sheets (cut ¼c more)	8.00
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.25
Seamless copper	15.62½
Rods	
Yellow brass (high, full turnings)	10.75
Naval brass	11.87½
Anodes	
Copper, untrimmed	12.62½
Wire	
Yellow brass (high)	13.00

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.00 to 4.25
Chicago	3.75 to 4.00
Cleveland	4.25 to 4.50
St. Louis	4.00
Heavy Yellow Brass	
New York	2.75
Heavy Copper and Wire	
New York	5.25
Boston	4.75 to 5.00
Chicago	4.25 to 4.50
Cleveland	4.50 to 4.75
St. Louis	4.25 to 4.50
Composition Brass Borings	
New York	3.75 to 4.00
Yellow Brass Tubing	
Cleveland	2.75 to 3.00
Light Copper	
New York	4.25
Chicago	3.50 to 3.75
Cleveland	3.75 to 4.00
St. Louis	4.00
Light Brass	
Boston	1.75 to 2.50
Chicago	2.25 to 2.50
Cleveland	1.75 to 2.00
St. Louis	2.25
Zinc	
New York	1.00 to 1.25
Cleveland	1.00 to 1.25
St. Louis	1.50
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	8.00 to 9.00
Borings, Cleveland	3.00 to 3.25
Mixed cast, Cleveland	3.75 to 4.00
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt aluminum No. 12'	8.50 to 9.50
Brass ingots, 85-5-5-5	7.37½

Metals

Price Advances Predominate Although Activity Tapers as Week Closes—Copper Holds

New York—Price advances predominated in nonferrous metals last week. Lead, tin, zinc, antimony and silver all moved to higher levels. Copper remained unchanged, however. The sharp uptrend in silver has had the effect of bolstering the rate of exchange on sterling and stimulating speculative interest in world markets. Buying of all metals subsided toward the close of the week but prices held remarkably steady at the higher levels.

Copper—The market firmed at the beginning of the week on reports that producers would reach some agreement on curtailment and both foreign and domestic buying increased. Uncertainty as to the outcome of the conference brought a lull in purchasing toward the close of the week and consumers adopted the attitude of awaiting actual developments. Recent domestic buying has been for February and March needs as well as for early shipment.

Tin—Domestic buying of tin has continued light although prices have increased fractionally on reports of advances in London, the higher rate of exchange, the advance in silver and improved demand abroad. Prices eased slightly toward the close of the week, however.

Lead—Demand for lead increased last week with all classes of consumers well represented in the market. This was accompanied by two consecutive advances early in the week. Sales tapered off toward the close but quotations held steady.

Zinc—Fair orders were booked for prime western and high-grade zinc until after mid-week when quietness again predominated in the market. Prices showed a slight uptrend during the week with sellers more reluctant to take orders at current low levels. Business fell off at the close.

Antimony—Prices again moved upward last week due to strength in the Chinese market. Sales in this country remain slow despite the advance.

Silver—Quotations have moved to new high levels for the year. The advance has had a stimulating effect on other markets and has greatly augmented the purchasing power of the Far East.

Aluminum—The market remained generally quiet, with prices holding at unchanged levels.

Distillate Prices Firm; Sulphate Easier

New York—New business in distillates shows little improvement, but supplies for immediate shipment are not large and ditsributors in some instances are able to cover only regular customers' needs. Prices are firm. Phenol is slightly more active. Spot volume in naphthalene is light. Some consumers are inquiring for next season's needs. Sulphate of ammonia, gradually sinking, is reported moving as low as $1.10 per 100 pounds, Atlantic seaboard.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver $72-$74

New York—Quicksilver is now quoted $72 to $74 a virgin flask of 76 pounds, net, for spot delivery. The general market is quiet, but some fair orders have been reported.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
November 7	7.00	7.37½	6.87½	23.20	23.75	3.85	3.65	3.20	6.75	22.90	35.00
November 9	7.00	7.37½	6.87½	23.50	24.25	3.95	3.75	3.22½	6.75	22.90	35.00
November 10	7.00	7.37½	6.87½	23.87½	24.25	4.07	3.90	3.25	7.00	22.90	35.00
November 11	7.00	7.37½	6.87½	23.12½	23.50	4.07	3.90	3.25	6.87½	22.90	35.00
November 12	7.00	7.37½	6.87½	23.25	23.80	4.05	3.90	3.27½	7.00	22.90	35.00
November 13	7.00	7.37½	6.87½	23.25	23.75	4.05	3.90	3.30	7.00	22.90	35.00

Europe

British Production Gains and Sentiment Is Better—Continent Feels Competition in Exports

London—(*By Cable*)—Reports from South Wales are encouraging and sheetmakers in Scotland have booked foreign orders to the extent of 4000 tons. Improvement in the outlook for shipyard activity continues. Shipment of pig iron from Middlesbrough in October was an improvement at 7515 tons. In general the pig iron market is quiet and hematite stocks are heavy.

Structural demand in the Midlands is inactive but in semifinished a better tone prevails and billet prices are hardening. Imports are decreasing and tin plate exports to the Far East and the Continent are moderate. Galvanized sheets are weak.

Pig iron production in October was 284,200 tons, with 66 blast furnace stacks active, compared with 248,200 tons, in September, with 62 stacks active. The daily average rate in October was 9473 tons, compared with 8270 tons in September. Steel ingot and castings production in October was 457,400 tons, a daily average of 15,246 tons, compared with 400,500 tons, a daily average of 13,350 tons, in September.

From Brussels comes the report that some competitive business has been obtained in France, especially in sheets. Markets in the Far East are more active. Berlin reports trade depressed although new Russian rail orders have been obtained. British competition is being felt in the German export market. French steelmakers feel the effect of the depreciation of sterling in their export trade and pig iron from Holland is also a keen competitor.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Nov. 12

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental metric tons Channel or North Sea ports	£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$11.06	2 18 6	$8.51 to $8.88	2 5 0 to 2 7 0
Basic bessemer	10.58	2 16 0*	7.75 to 7.94	2 1 0 to 2 2 0
Hematite, Phos. .03-.05	12.29	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$20.32	5 7 6	$10.40 to $10.58	2 15 0 to 2 16 0
Wire rods, No. 5 gage	32.13	8 10 0	18.90 to 19.85	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$31.19	8 5 0	$22.21	5 17 6
Merchant bars	1.18c	7 0 0	.51c to .52c	3 0 0 to 3 1 0
Structural shapes	1.31c	7 15 0	.50c to .51c	2 19 0 to 3 0 0
Plates, †¼-in. or 5mm.	1.39c	8 5 0	.60c to .61c	3 11 0 to 3 12 0
Sheets, black, 24 gage or 0.5mm.	1.48c	8 15 0	1.28c to 1.30c	7 10 0 to 7 12 6
Sheets, gal., 24 gage, corr.	1.61c	9 10 0	1.36c to 1.38c	8 0 0 to 8 2 6
Bands and strips	1.61c	9 10 0	.66c	3 17 6
Plain wire, base	1.44c	8 10 0	.89c	5 5 0
Galvanized wire, base	1.86c	11 0 0	1.05c	6 3 9
Wire nails, base	1.86c	11 0 0	.90c	5 6 3
Tin plate, box 108 lbs.	$ 2.74	0 14 6	$2.49	0 13 2‡

British ferromanganese £20 10s 6d ($77.58) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($34.02) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Renten Marks
Fdy. pig iron, Si. 2.5	$11.06	2 18 6	$10.81	275(2)	$11.48	410	$18.49	78
Basic bessemer pig iron	11.34	3 0 0*			10.64	380	20.26	85.50
Furnace coke	2.08	0 11 0	5.70	145	5.18	185	5.07	21.40
Billets	19.85	5 5 0	19.26	490	14.70	525	26.19	110.50
Standard rails	1.39c	8 5 0	1.41c	785	1.57c	1,210	1.36c	127
Merchant bars	1.18c	7 0 0	.90c	500	.72c	550	1.37c	128
Structural shapes	1.48c	8 15 0	.99c	550	.70c	535	1.34c	125
Plates, †¼-in. or 5mm.	1.52c	9 0 0	1.17c	650	.86c	665	1.65c	154.50
Sheets, black, 24 ga. or 0.5mm.	1.48c	8 15 0	1.84c	1,020	1.73c	1,330	2.73c	255
Sheets, galv., corr., 24 ga. or 0.5mm.	1.63c	9 12 6	2.39c	1,325	1.95c	1,500	4.39c	410
Plain wire	1.44c	8 10 0	1.68c	935	1.95c	1,500	2.21c	207
Bands and strips	1.61c	9 10 0	1.13c	625	1.04c	800	1.58c	148

*Basic. †British ship-plates, Continental bridge plates. ‡German.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

British Steel Replaces That Formerly Imported

Birmingham, Eng.—A survey of the iron and steelmaking districts shows that improvement of the last few weeks has been centered mainly in South Wales. Furnaces have been restarted to provide steel hitherto imported for the manufacture of sheets and tin plate. The heavy steel position is in unsatisfactory condition, owing to slackness in the structural market and in no instance is there any evidence that big projects are pending. One hopeful sign is the proposed expenditure of the railroads in the coming winter. Two of the main line companies have disclosed projects totaling £7,000,000.

The monthly meeting of the Central Pig Iron Producers association at Birmingham decided to make no alteration in the current prices of foundry pig iron. Traders regard this as a sane policy because it is generally felt that the best encouragement to trade revival will be the establishment of prices reasonable to sellers and buyers.

Consumers of pig iron in the Midland district have sent in more orders in October than for many months past but they are in no hurry to take delivery and this after all is the vital factor for furnacemen, who have heavy stocks to liquidate and a constant output for disposal.

Shipments Increase

Ironmasters on the Tees are satisfied with progress inasmuch as the month's shipments will show a substantial increase. A big proportion of ironmasters' stocks has been sold and it is anticipated that output will soon have to be increased. Similarly, in regard to hematite, makers are well sold and are making no attempt to obtain more than £3 6s ($12.79) for ordinary qualities. This figure, however, applies only to deliveries a month or two ahead.

The galvanized sheet trade has suffered some relapse in the last week or two. All the works are now anxious for orders with the result that the basis of £9 15s ($37.71) for 24 gage is being cut to as low as £9 10s ($36.42).

This is an unprofitable price and a number of firms who are in a slightly stronger position in regard to orders will not touch this business. In Scotland producers of sheets are doing a moderate turnover-

HILLMAN COAL & COKE CO.

First National Bank Building . PITTSBURGH, Penna.

NEW YORK
Whitehall Bldg.

BALTIMORE
23 West North Ave.

PHILADELPHIA
Pennsylvania Bldg.

COAL Pittsburgh Gas, Steam and Connellsville Coking Coals Jerome Low Volatile Smokeless for By-Product mixtures bunkering and steam purposes where smokeless fuel is required. Modern cleaning equipment guarantees uniformly Low Ash, Low Sulphur Product.

COKE Standard Low Sulphur Connellsville Coke for Blast Furnaces, Foundries and all other purposes.

Production 7,000,000 tons annually **Daily shipments 23,000 tons**

ANY RAILROAD DELIVERY

Cleveland-Cliffs

Iron Ore-Pig Iron Coal-Coke

TRADE C C I C MARK

THE CLEVELAND-CLIFFS IRON COMPANY

UNION TRUST BUILDING, CLEVELAND, OHIO

Machinery

REAL stimulus has been given to machine tool business this week. Studebaker Corp. has placed a $216,000 order with Ingersoll Milling Machine Co. and nearly $300,000 more is pending. This equipment is for producing the new Rockne car. Midland Steel Products Co., Cleveland, has taken over production of Hudson rear axle housings and has released some substantial equipment orders. The greatest optimism is reflected from Chicago, with Cleveland a close second. Sentiment also is better in Pittsburgh and New York, but Worcester fails to react favorably as yet. There are reports that Russian interests are seeking extensions.

New York—A slight increase in inquiry and improved sentiment prevails here in the machine tool industry. In some instances long-dormant business has been revived, dealers and builders being asked to bid again on equipment on lists originally brought out earlier in the year and never placed. Orders have resulted in some cases.

While actual increase in volume is rather small, there are some notable exceptions, one dealer reporting the best week in several months. The pick-up in interest is well spread, being confined to no one branch of industry, although several of the largest buyers of equipment are not included. This development has given sales departments more prospective business to work on, the boards having been, until recently, all but clear of active prospects.

A good part of the list for the 207th street subway shops remains to be placed by the general contractor. Government departments continue to take bids on a few tools. Word comes from Washington that on Nov. 24, the navy bureau, department of supplies and accounts, will close bids on one motor-driven engine lathe for Brooklyn or San Francisco, an engine lathe for Mare Island and another for Philadelphia.

Worcester, Mass.—Manufacturers invariably took complete advantage of a mid-week holiday to close their plants and despite reports of improvement elsewhere no definite trends are yet available in this district, where business shows no disposition to lift off of the bottom on which it recently has been dragging. Some inquiry is outstanding for single units in varied lines but there is nothing else on the horizon to indicate that any reasonable number of orders will be booked before 1932.

Announcements from Detroit of new models of automobiles are interesting to makers of grinders in particular, although there is little expectation that any marked acceleration to the machine tool business will follow immediately. The navy department continues to be the only domestic hope in the lathe field and several schedules now pending are being watched closely.

Pittsburgh — Moderate improvement in inquiry is noted in the machine tool market and serves to support the slight gain in activity that has prevailed since October.

One steel company in this district has issued a list of six tools for estimating purposes and several requests for prices on individual items have been received from other interests. Westinghouse Electric & Mfg. Co. has placed two tools for its Mansfield, O. plant. Actual volume of orders shows little change, however.

While sellers generaly are more optimistic regarding the business outlook for the coming months, they are conservative, in that they look for nothing more than mild improvement for some time to come.

Cleveland — Certain machine tool builders here have received worthwhile orders recently and others have good reason to expect orders soon. Naturally, sentiment has improved greatly. Automotive activity accounts for the present situation, which is the most hopeful since early in the spring.

Representatives of leading Cleveland companies are working hard on a Studebaker corporation project, said to involve about $500,000 worth of new equipment for manufacturing the new Rockne car. Hope runs high in that direction.

Another factor of importance is the taking over of the complete manufacture of Hudson rear axle housings by Midland Steel Products Co., Cleveland. Reports that this will involve considerable new equipment are borne out by the purchase of two special drilling and boring machines from a Cleveland company. This order is said to amount to about $16,000.

Chicago — Slightly improved inquiry has occurred in the machine tool market, chiefly in a number of minor items. Several programs still are pending. An inquiry amounting to $10,000 or $12,000 from a local steelworks, including a 27-inch lathe, lies dormant, however. Recent interest shown in used tools has developed no sales of consequence.

While November sales in this district are likely to show a moderate gain over October, local activity apparently lags behind that in the New York-Philadelphia area, as well as below that in the Detroit district.

In addition to orders for machine tools totaling $216,000 just placed by the Studebaker Corp., South Bend, Ind., with Ingersoll Milling Machine Co., Rockford, Ill., the Studebaker corporation is figuring with machine tool dealers in the Chicago district on some equipment for machining crankshafts and piston rods. No formal inquiry has been issued, but it is probable further substantial orders will be closed in the near future. The order placed with the Ingersoll company largely was for equipment for machining engine blocks for a new car.

Machinery Exports Show a Gain in September

With a renewed upward tendency, exports of industrial machinery from the United States during September totaled $13,282,000, a considerable gain over the August total of $9,926,000, according to the industrial machinery division of the department of commerce. The total in September, 1930, was $15,215,000.

The most noteworthy development of foreign trade in industrial machinery during the nine-month period of the present year has been the continued activities in sales abroad of metalworking equipment. For the period January to September exports of this class of goods exceeded similar shipments for the corresponding period of 1930 by more than $1,000,000. This performance is particularly commendable when it is considered that the annual figure for 1930 established a record for recent years and since that time exports of commodities in general have been falling off consistently. During September, 1931, this business reached a total of $5,548,000, a considerable increase over the totals established for both the previous month and September, 1930. Sheet and plate metalworking machinery was the leading item in this classification, followed by forging machinery, gear cutting machines and drilling machinery.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

EAST HARTFORD, CONN.—Hamilton Standard Propeller Corp., subsidiary of the United Aircraft & Transportation Co., is moving from West Homestead, Pa., to East Hartford, where it will occupy part of the Pratt & Whitney plant.

NEW HAVEN, CONN. — Krischer Mfg. Co., manufacturer of trunk and specialty hardware, has leased a plant here and will start operations soon.

WEST HAVEN, CONN.—Metal Products Corp., 510 First avenue, will engage in the manufacture of hardware and cooking utensile.

AMESBURY, MASS. — Amesbury Brass & Foundry Co., manufacturer of display cases for frozen foods, has taken over remainder of buildings it has occupied in part and will enlarge production.

BOSTON—Reliable Automatic Sprinkler Co. of New England, 291 Ruggles street, is undertaking manufacture of a sprinkler system of new type.

BOSTON—Perin Walsh Co., manufacturer of truck bodies and equipment, is moving to new quarters with double former space and increasing production.

BOSTON—Contract will be let soon for a pumping and filter station at Fresh Pond, Cambridge, to cost $100,000. Fuller & Everett, 25 West Forty-third street, New York, are engineers.

LYNN, MASS.—Joseph E. Swendeman has leased space and installed machinery for the manufacture of the Swendeman steam trap and other steam specialties.

PAWTUCKET, R. I.—Frank Davis Mfg. Co. Inc. has been organized here for the manufacture of metal specialties.

WESTERLY, R. I.—Trustees of Roger Williams university, care Woodbury & Stewart, 581 Boylston street, Boston, have authorized construction of a college group to cost $2,000,000, including a power house.

New York

BUFFALO—Plant of Aldrich Mfg. Co., manufacturer of copper and brass products, has suffered considerable damage by fire to machinery and finished products.

NEW ROCHELLE—Chromware Corp. has been incorporated with $10,000 capital to carry on a galvanizing business, by B. Margolis, New Rochelle.

NEW YORK—Arrow Steel & Iron Works has been incorporated with $10,000 capital by J. B. Lindner, 51 Chambers street.

NEW YORK—Universal Dryer Mfg. Corp., 1820 Atlantic avenue, Brooklyn, has been incorporated with $5000 capital to manufacture clothes dryers.

NEW YORK—S. Betten has been incorporated with 200 shares common stock to manufacture metal products, by P. Betten, 132 West Thirty-first street.

NEW YORK—Clipsteel Co. has been incorporated with $100,000 capital to conduct an iron and steel business, by Sweeney & Hayes, 41 Park Row, New York.

NEW YORK—Pioneer Mounting & Finishing Co. has been incorporated with $10,000 capital to manufacture steel dies, by A. B. Albert, 302 Broadway.

NEW YORK—General Scaffolding Engineers has been incorporated with 6000 shares common stock to design scaffolding and similar work, by Fosdick & Belknap, 61 Broadway.

NIAGARA FALLS—Roessler & Hasslacher Chemical Co. has filed plans for construction of a 1-story brick and steel addition to its plant, 42 x 53 feet, for use as a filter plant.

OSSINING—Department of correction, state office building, Albany, will take bids until Dec. 10 for a power house, tunnels, heating and electric connections and accessories for Sing Sing prison.

New Jersey

MOUNT HOLLY—Brantly-Wolfsberg Engine Co. has been incorporated with $100,000 capital to manufacture engines and machinery.

NEWARK—Welin Davit & Boat Corp. has been incorporated with 2500 shares common stock to manufacture boats and fittings by Philip L. Coffin Jr., Newark.

TEANECK — United Sheet Metal Works Inc. has been incorporated with 1000 shares common stock to manufacture sheet metal products.

UNION CITY—Tungsten Repair Parts Inc. has been incorporated with $25,000 capital to manufacture and deal in ignition systems, by Debaun & Westervelt, Hackensack, N. J.

Ohio

EDGERTON—A bond issue of $25,000 has been approved, to provide funds for a municipal electric light plant.

SANDUSKY — Universal Pipe Co. plans erection of a 1-story plant for the manufacture of metal pipe at an estimated cost of $40,000.

Michigan

MARQUETTE—City waterworks will be enlarged by addition of three electric pumping units, two to be of dual drive type with gasoline standby motors. Cost is estimated at $40,000. Pearce, Greely & Hansen, 6 North Michigan avenue, Chicago, are engineers.

Illinois

CHICAGO—Farrington Outing Mfg. Co., 1116 North Clark street, has been incorporated with $10,000 preferred stock and 2000 shares no par value to conduct a general mechanical business, by R. E. Schreiber, Otis building, and associates.

CHICAGO—Ice Cream Freezer Corp., 105 West Madison street, has been incorporated with 6000 shares no par value to manufacture and deal in machinery and devices for the manufacture and sale of ice cream and similar products, by Louis Jaffa, 100 North La Salle street, suite 1400.

DECATUR—An election will be called soon on $275,000 bonds for new boilers, pumps and other improvements to the water works plant. M. P. O'Brien, city hall, is engineer.

HOOPESTON — Sprague-Sells Corp., manufacturer of canning machinery, advises by M. W. Sells, vice president, that its addition will cover 81,000 square feet of floor area, L shape, one story, high and low bay construction. About 350 tons of steel will be requird.

MOLINE—Airforce Conveyor Sales Inc., 1819 Fifth avenue, has been incorporated with $250,000 preferred stock and 10,000 shares no par value to manufacture machinery, by Andrew R. Kopp, 307 Reliance building, Moline.

ROCK ISLAND—United States engineer office will receive bids until Dec. 18 for a locomotive crane and a bridge crane unit in connection with lock and dam No. 15 in the Mississippi river.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until Nov. 17 on schedule 6875 for an automatic arc welding machine for use in the structural shop at the Philadelphia navy yard.

BALTIMORE—Baltimore Tube Co., 1301 Wicomico street, is building a plant addition, one story, 110 x 251 feet, steel frame, metal siding. Dietrich Bros., Pleasant and Davis streets, contractors.

BALTIMORE—Acme Metal & Iron Co. has been incorporated with $50,000 capital and 500 shares no par stock to conduct a scrap business, by Joseph Aaronson, Israel Hoffman and associates..

Missouri

JEFFERSON CITY—Missouri Valley Engineering Co. has been incorporated by O. P. Grina and J. A. Abel.

MAYSVILLE—Contract will be

let soon for improvements to city waterworks, including a well, filter and pumping plant with four motor-driven pumps and other equipment. W. B. Rollins Co., 339 Railway exchange building, Kansas City, is engineer.

SPRINGFIELD—Bureau of prisons, department of justice, Washington, is taking bids on mechanical and other buildings for the hospital for defective delinquents at Springfield, including a power house. Cost is estimated at $2,500,000.

ST. LOUIS—Board of public service plans a 1200-foot reinforced concrete bridge 60 feet wide Hampton avenue over railroad tracks. Cost estimates at $475,000.

Oklahoma

EL RENO—Bureau of federal prisons, Sanford Bates superintendent, Washington, is making plans for a power house unit and shop building equipped with machine tools in connection with the federal reformatory under construction here. Hawk & Parr, Hales building, Oklahoma City, Okla., are architects.

OKLAHOMA CITY—L. M. Bush, city engineer, is making plans for construction of a steel and concrete hangar, 120 x 120 feet, at the municipal airport.

SAPULPA—Community Ice & Produce Co., C. L. Ascraft, Sulphur Springs, Tex., owner, plans erection of a 30-ton capacity ice and cold storage plant here, including refrigerating pumps and compressor equipment.

Texas

COLLEGE STATION—Trustees of the state agricultural and mechanical college are having plans made for an agricultural engineering building and petroleum engineering building, to cost $200,000.

DALLAS—Southwest Body Co. has been incorporated with $1500 capital to manufacture automobile bodies, by G. D. Anderson, 6358 Llano street.

DALLAS—Slate Aircraft Corp., Glendale, Calif., is investigating possible sites for location of a branch manufacturing plant for construction of all-metal dirigible airships. W. W. Ferris and P. H. Harsh, care chamber of commerce, Dallas, are factory representatives.

HAMILTON—Stiles Mfg. Corp. has been incorporated under a Delaware charter, with $50,000 capital and 500 shares common stock, to manufacture agricultural implements, by Colonial Charter Co., Wilmington, Del.

Wisconsin

OCONTO—City plans improvements to the municipal electric light plant, with additional equipment, to cost $70,000.

Kansas

CHANUTE — Kansas Communities Gas Co., W. E. Murphy, general manager, is having plans made for a 12-mile pipe line and compressor station, to cost $100,000.

Wyoming

CASPER—Standard Oil Co. of Indiana, Chicago, will enlarge its refinery at Casper at a cost of $400,000.

Idaho

BOISE—R. J. Berry, Findlay, O., has applied for a franchise to build pipe lines to serve southwest Idaho with natural gas. He represents Ohio Oil Co., now drilling near Weiser, Idaho.

Pacific Coast

SAN FRANCISCO—United States bureau of public roads plans construction of nine mechanical buildings at Alameda, Calif., to cost $800,000.

SEATTLE—W. T. Butler Construction Co. has the general contract for an engine building and other structures for the Great Northern railroad terminal near Klamath Falls, Oreg.

WALLA WALLA—Bids will be received soon for a municipal hangar 60 x 80 feet or 80 x 100 feet, steel, wood or combination type.

Dominion of Canada

CRANBROOK, B. C.—City council proposes to discontinue purchase of electric power from the East Cootenay Power Co. next spring and to build its own power plant. Bids are being taken on generating plant, steam or diesel, as no water power is available. Appropriation to cover cost will be voted on at approaching election. F. W. Burgess is clerk.

HAMILTON, ONT.—Canadian Westinghouse Co. has started work on a new plant addition to cost $300,000. Equipment will be installed for the manufacture of refrigerators and similar products.

OSHAWA, ONT. — Oshawa Public Utilities commission is having plans made for a filtration plant to cost $85,000. F. B. Goedike is city engineer. A sewage disposal plant costing $434,000 is also being considered.

RIDGETOWN, ONT.—Superior Chain Plating Co. Ltd., whose plant at Tilbury, Ont., was destroyed by fire is completing plans for a new plant here. John Slasarchuck, Tilbury, is manager.

WELLAND, ONT.—American Manganese Steel Co., Chicago, has awarded a contract to the Volta Mfg. Co., Welland, for rebuilding of the furnaces at its newly-acquired plant in Dennistown street. Other contracts for rehabilitation of the plant are to be awarded shortly. (Noted Oct. 26.)

ROUYN, QUE.—Ventures Ltd., Concourse building, Toronto, Ont., plans to build a 5000-ton mill on its Beattie property in Quebec. Date of start uncertain.

New Trade Publications

LOCKSCREWS—Application of its self-locking screw thread to sucker rods to prevent loosening of joints is the subject of Bulletin No. 7 by the Dardelet Threadlock Corp., New York.

BEARINGS—Ohio Ball Bearing Co., 6531 Euclid avenue, Cleveland, is distributing Catalog C, covering ball, roller and thrust bearings carried in stock for immediate shipment. It is fully illustrated and tables give engineering data.

FLASH WELDER—A bulletin by the Thomson - Gibb Electric Welding Co., Lynn, Mass., describes two types of flash welders, one with hand toggle and clamps and the other with power push-up and air clamps. Details are given.

GRINDER—A bulletin by the Layth-Grinder Corp., 28 Canfield street, Orange, N. J., describes its precision grinder for engine and bench lathes. Recent improvements are described and engineering data are given.

MOTORS—Reliance Electric & Engineering Co., Ivahoe road, Cleveland, in Bulletin No. 210 describes its type T 2-pole motors for direct current, with illustrations of the motors, entire and disassembled.

MOTOR DRIVES—A catalog by Hertler & Zook Co., Belleville, Pa., illustrates and describes individual motor drives for machine tools and other machinery. The variety covers a wide range of belt-driven tools which may be modernized by individual drives.

WELDING—Linde Air Products Co., 30 East Forty-second street, New York, in a current bulletin announces a newly devised welding appliance for rapid welding with lessened effort. The device is illustrated and description of its operation is given.

GALVANIZED SHEETS—A bulletin by the Superior Sheet Steel Co., Canton, O., describes its galvanized and annealed sheets, in which close bond is obtained between the metal and coating. Illustrations suggest a wide range of uses for this type of metal.

PLATING DIE CASTINGS — New Jersey Zinc Co., 160 Front street, New York, has issued a bulletin entitled "The Plating of Rolled Zinc and Zinc Die Castings," by E. A. Anderson and C. E. Reinhard. A card giving the exact procedure followed in plating zinc die castings is included.